

대학생의 헌혈에 대한 지식, 인식수준에 따른 헌혈행태

Association between Knowledge, Attitude, and Practice Regarding Blood Donation in University Students

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요약

본 연구는 대학생의 헌혈지식, 헌혈인식, 헌혈태도간의 관련성을 살펴보고, 헌혈 촉진 및 저해 요인을 파악하여 헌혈 참여 확대 방안을 모색하는 것이다. 자료는 2014년 12월 8일부터 12일까지 국내 두 개 대학교의 보건계열 20대 대학생 272명을 대상으로 헌혈지식, 헌혈인식, 헌혈경험에 관한 구조화된 자기기입식 설문지를 이용하여 수집되었다. 분석방법은 Pearson correlation test, t-test, descriptive statistics를 실시하였다. 주요 연구결과는 다음과 같다. 첫째, 헌혈인식이 긍정적일수록 헌혈횟수가 증가하는 것으로 나타났다($P < .05$). 둘째, 보건계열 전공생과 비보건계열 전공생 집단 간 헌혈지식($P < .01$)과 헌혈인식($P < .05$)에 차이가 있었다. 셋째, 헌혈경험자가 헌혈비경험자에 비해 헌혈 참여의도가 높았다($P < .01$). 분석 결과를 토대로 20대 대학생의 헌혈을 장려하기 위해서는 미디어 홍보를 통한 헌혈인식 개선과 헌혈에 대한 보상을 강화하는 방법이 효과적일 것이라 제언한다.

■ 중심어 : | 지식 | 인식 | 행태 | 헌혈 | 보건 |

Abstract

The present study aims to investigate the association between knowledge, attitude, and practice of blood donating in an effort to increase the participation rate of blood donation among university students. Data was obtained among 272 in their 20s health sciences students in two university of South Korea through self-reported questionnaires including Knowledge, attitude, and behavioral practice regarding blood donation during 8st December 2014 to 12st December 2014. Pearson correlation test, student's t-test or descriptive statistics were performed for the data analysis. The results were as follows: 1) There was positive significant relationship between Attitude and behavioral practice towards blood donation($P < .05$). 2) There was significant difference in the knowledge($P < .01$) and attitude($P < .05$) regarding blood donation according to public health vs non-public health. 3) The participants with previous blood donation experiences showed a higher participation rate than those without such an experience($P < .01$). It is important not only to improve the university student's attitude towards blood donation through media advertising but also to reinforce the compensation offered to donors.

■ keyword : | Knowledge | Attitude | Practice | Blood Donation | Public Health |

I. INTRODUCTION

The safety of donating blood has become a major issue of concern. However, distrust for blood due to infection transmitted from blood transfusions, increase of unqualified rate for blood donation, and decrease of the younger population, which lead to the blood supply shortage. According to blood management policy in Korea, group under the age of thirty accounts for 82% of the total donation in Korea and blood transfusion is being made more 6-8 times in the elderly than other age groups[1]. Increase in the elderly population in aging society made them be susceptible to suffer from severe disease, which is expected to be in need of blood transfusions. The major part of blood requirements in Korea has been meeting through blood donations. In particular, over the 10-year period, blood donation rate by have decreased 55.3% in 2002 to 40.2% in 2012[2]. The participation of university students is required to meet blood shortage.

The topic of blood donation among university students has not received much attention in Korea and international study, Aside from the occasional paper published in health, medical, and nursing journals[3-10]. The previous study showed that there were no significant differences in knowledge level between the donors and non-donors, who consisted of university students[7], medical and nursing students[5][8-10], and liberal arts students and science studies students[11], whereas significant difference was detected between the donors and non-donors because donors were more knowledgeable than non-donors, and educational attainment had an effect on the individuals' knowledge level regarding blood donation[12][13].

Concerning blood drive, many studies said that the most commonly cited reason for donating blood was

'to be able to use it when I need it'[12][14][16]. The other study reported 'to be at society's service' as the most common response, followed by 'to donate while healthy and use it when ill.', [11][17][18]. As seen so far, study results regarding individuals' motivation to donate blood are contradictory. This may be due to the differences in socio-demographic variables between donors and non-donors, or it may be generational effects resulting from more than 30 years of time span between the investigations. If so, data collected before the 1990s may not be relevant today. As such, a new study which examines the above is needed for the purpose of data comparison.

The aim of this study was, in an effort to increase the participation rate of blood donation, i) to investigate the association between an individual's knowledge, attitude, and the number of donations ii) to evaluate the difference in knowledge, attitude, and the number of donations between public health majors and non-public health majors and donor and non-donor iii) to suggest the factors influencing blood donation.

II. MATERIALS AND METHODS

1. Study participants

A cross-sectional study was conducted among health sciences students through self-reported questionnaires during 8st December 2014 to 12st December 2014. We examined a total of 280 consecutively enrolled individuals majoring in health science in two university during this period. Subjects with over the age of 20 and those who did not comply with questionnaires were excluded from this study. The final study sample included 272 subjects. Written consent forms were signed by the study participants. The study participants were limited to university

students in their 20s. Participants were classified into two groups according to the fields of study (public health majors vs others), as those majoring in public health related fields are likely to possess a positive attitude towards blood donation influenced by education and field training. Even if the participants were enrolled in public health related studies: physical cure, operation treatment, and optical science if the programs did not offer courses in which blood donation related subjects are taught, the participants were classified into non-public health majors for the sake of the operational definition.

Knowledge was assessed through 18 questions addressing 6 questions of 'blood donation standards', 6 questions of 'blood collection and handling', and 6 questions of 'blood donation and health'. Each correct answer scored 1 point and incorrect answer scored 0 point. Attitude was measured with 5 questions addressing 'positive blood donation experience', 'perception of blood center', 'participation in blood shortage situations', and 'perception of recommending blood donation'. The score for knowledge ranged from 1 to 5 using likert scale. Behavioral practice was classified into 'donor' and 'non-donor'. Only donor recorded the total number of blood donation.

Table 1. General characteristics

Characteristics	Categories	N (%)	Mean(S.D)
Age	20's	272(100.0)	23.9
Gender	Male	143(52.6)	
	Female	129(47.4)	
Military duty	Yes	130(47.8)	
	No	142(52.2)	
Grade	Junior	134(49.3)	
	Senior	138(50.7)	
Faculty	Public Health1	146(53.7)	
	Non-Public Health	126(46.3)	
Practice	The total number of blood donation		
	Donor	160(58.8)	4.4(3.4)
	Non-donor	112(41.2)	

Public Health1: (Clinical Laboratory Science, Nursing)

Public Health2: (Emergency Rescue, Physical Cure, Operation Treatment, Optical Science)

2. Statistical analysis

Statistical analysis was performed using the STATA software (version12.0) for Window and data are presented as means(SD) or frequency and percentage. Pearson correlation analysis was performed to examine the association between knowledge, attitude and the number of donations. Student's t-test was applied for analysis of determine whether there is difference in knowledge, attitude, and practice according to public health majors and non-public health majors and donors and non-donors. Finally, descriptive statistics were used to analyze potential factors influencing blood donation. Two-sided P-value <0.05 was considered statistically significant.

III. RESULTS

3.1 General characteristics of the study participants

General characteristics of the study participants are shown in [Table 1]. The mean age of participants was 23.9 years. The proportions of males and females were 52.6% and 47.4% respectively. Military service was yes (47.8%) and no (52.2%). Grade was junior

(49.3%) and senior (50.7%). Participants majoring in public health accounted for 53.7%, and those majoring in non-public health accounted for 46.3%. Mean score ranged for knowledge from 3.5 - 4.2 and for attitude 3.3 - 4.0. The proportion of participants who have donated blood before was 58.8%, while the proportion of those who have not donated blood before was 41.2%. The average number of donations was 4.4 [Table 1].

3.2 Association between knowledge, attitude and the number of donations

Correlation analysis was performed to examine the potential effects of knowledge and attitude on the number of donations, the results of which are displayed in [Table 2]. The number of donations had a weak positive correlation with Positive blood donation experience ($r=.19, p<.05$), Perception of blood center ($r=.19, p<.05$), and participation in blood shortage situations ($r=.21, p<.05$). However, the correlation between the number of donations and knowledge was not statistically significant [Table 2].

3.3 Difference of knowledge, attitude, and practice according to Public health vs Non-Public health

[Table 3] depicts the results of the analysis performed to examine the average knowledge level, attitude, and the number of donations according to

public health vs non-public health. The participants majoring in public health were found to be more knowledgeable about blood donation in general ($p<.001$), blood donation standards ($p<.001$), and blood collection and handling ($p<.05$), blood donation and health ($p<.05$). Statistically significant differences between the two groups of participants was only found in the area of attitude, with more public health majors responding positively to the question relating to participation in blood shortage situations ($p<.05$).

As for the average number of donations, the difference between the two groups was not found to be statistically significant [Table 3].

3.4 Difference of knowledge and attitude according to Donor vs Non-donor

[Table 4] reveals the results of the analysis performed to identify whether there is a difference in knowledge and attitude between those who had donated blood before and those who had not. A statistically significant number of participants who have donated blood before responded positively to the question relating to 'participation in blood shortage situations' ($p<.05$). With the exception of 'participation in blood shortage situations' no statistically significant differences were found in terms of knowledge and attitude between those who have donated blood before and those who have not [Table 4].

Table 2. Correlation between knowledge and practice and between attitude and practice

Characteristics	Categories	Mean(S.D)	Coef.(r)	P
Knowledge	Blood donation standards	3.8(1.0)	-.02	.84
	Blood collection and handling	4.2(1.2)	.07	.43
	Blood donation and health	3.5(1.1)	.07	.44
Attitude	Positive blood donation experience	3.9(0.8)	.19	.04*
	Perception of blood center	3.7(0.9)	.19	.04*
	Perception of blood donation	4.0(0.7)	.09	.31
	Participation in blood shortage situations	4.0(0.8)	.21	.02*
	Perception of recommending blood donation	3.3(0.8)	-.04	.63

* $p < .05$

Table 3. Difference of knowledge, attitude, and practice according to Public health vs Non-Public health

Characteristics	Categories	Public health	Non Public health	P
		Mean	Mean	
Knowledge	Total	4.18	3.64	.000***
	Blood donation standards	3.96	3.34	.000***
	Blood collection and handling	4.39	3.91	.011*
	Blood donation and health	3.56	3.29	.014*
Attitude	Total	3.62	3.45	.163
	Positive blood donation experience	3.89	4.05	.325
	Perception of blood center	3.77	3.68	.560
	Perception of blood donation	4.08	3.89	.123
	Participation in blood shortage situations	4.05	3.80	.041*
Practice	Perception of recommending blood donation	3.36	3.20	.270
		4.53	4.24	.717

* $p < .05$, *** $p < .001$

Table 4. Difference of knowledge and attitude according to Donor vs Non-donor

Characteristics	Categories	Donor	Non-donor	p
		Mean	Mean	
Knowledge	Total	4.02	3.96	.627
	Blood donation standards	3.77	3.72	.804
	Blood collection and handling	4.24	4.21	.891
	Blood donation and health	3.52	3.31	.288
Attitude	Total	3.79	-	-
	Positive blood donation experience	3.95	-	-
	Perception of blood center	3.72	3.78	.690
	Perception of blood donation	4.04	3.96	.514
	Participation in blood shortage situations	4.03	3.51	.003*
	Perception of recommending blood donation	3.30	3.33	.811

* $p < .05$

3.5 Analysis of potential factors affecting participation in blood donation

[Table 5] shows potential factors affecting participation in blood donation. For Factors promoting blood donation 'Altruism: noble act that can save lives' was the leading reason in peoples' positive attitude towards blood donation at 29.4%, followed by 'group blood donation', 'obtaining blood donation certificate', 'receiving acknowledgement', and '(in lieu of a) health check-up', indicating that reasons for donating blood vary widely. The media that had the greatest influence on the donation decisions was 'street campaign', which accounted for 22.5% of the total, closely followed by 'TV, radio ads, and 'visual marketing(bulletin boards, posters)', 'educational

session in school and military', and 'movies, internet, promotional videos.' Therefore, marketing strategies which incorporate the use of street marketing, TV, radio, and visuals will be very effective[Table 5].

For Factors inhibiting blood donation, the most reason for reluctance to blood donation was 'I was too tired and donating blood was too bothersome', which accounted for 25.0%, followed by 'anxiety over collection process', 'fear of disease infection via transfusion', and 'distrust for blood center' As seen here, perception of blood donation as a bothersome activity and distrust for blood center were quite prevalent amongst the participants. As such, education and marketing efforts through which to spread accurate information on, as well as the urgent

Table 5. potential factors affecting participation in blood donation

Factors	Categories	N (%)
Motivation as the source of blood donating	Altruism	47(29.4)
	Group Blood Donation	27(16.9)
	Obtaining blood donation certificate	23(14.4)
	Receiving acknowledgement	22(13.8)
	Health check-up	20(12.5)
	Obtaining volunteer work hours	9(5.6)
	Blood drive	5(3.1)
	Curiosity	4(2.5)
	Others	3(1.9)
	Total	160(100)
Channels as the source of blood donating	Street campaign	36(22.5)
	TV, Radio ads	35(21.9)
	Visual marketing(bulletin boards, posters)	32(20.0)
	Educational session in school and military	29(18.1)
	Movies, internet, promotional videos	17(10.6)
	Newspaper and magazine	4(2.5)
	Others	7(4.4)
	Total	160(100)
Reason for reluctance to blood donation	Being tired and troublesome	28(25.0)
	Anxiety over collection process	22(19.6)
	Fear of disease infection via transfusion	19(17.0)
	Distrust for blood center	18(16.1)
	Medical disqualification	11(9.8)
	No time or opportunity	10(8.9)
	Others	4(3.6)
Total	112(100)	
Reason for blood donation rate is low compared to developed countries	Lack of altruism'	90(33.1)
	Incorrect knowledge in donating blood	65(23.9)
	Lack of governmental support	41(15.1)
	Lack of promotion in donating blood	40(14.7)
	Lack of opportunities in donating blood	24(8.8)
	Others	12(4.4)
Total	272(100)	

need for blood donation appear to be critically important. Although nothing can be done about those who do not meet the donation health standards, providing more and better opportunities for blood donation is expected to improve the chance of recruiting the 8.9% who responded 'no time or opportunity to donate blood'. For the question regarding Korea's low blood donation rate, the majority of participants responded 'lack of altruism' at 33.1%, followed by 'Incorrect knowledge in donating blood', 'lack governmental support and 'insufficient promotion in donating blood'[Table 5].

IV. DISCUSSION

We found that individuals' knowledge was not associated with the number of donations. This finding was in accord with those of previous study[4][13][19], which reported that no significant differences in knowledge were found between donors and non-donors. Although the possibility exists that difficult questionnaire swayed the outcomes of the study, or assessment of knowledge was inaccurate otherwise, the fact that knowledge does not necessarily transform into a behavior was proven by these study results. In other words, the KAP model[20][21] which purports that knowledge affects

attitude, which, subsequently promotes behavior, is not applicable in the context of blood donation. The reason KAP model does not effectively explain the decision making process involved in blood donation appears to be that; a knowledgeable donor does not get a tangible reward or benefit from donating blood.

Considering the correlation between attitude and blood donating behavior, the number of donations increased along with donors' positive attitude towards blood donation($r=.19$, $p<.05$). Additionally, the more frequent donors had more positive perception of blood collection agencies($r=.19$, $p<.05$) than the less frequent donors. Some research has supported this finding of the survey, which reported that donors tend to respond positively to blood supply shortage[15-18], and willingness to participate in times of supply shortage[10][22][23]. Such findings indicate that a positive attitude toward blood donation nurtured by a positive blood donating experience will likely to lead to additional donations in the future. As such, efforts to cultivate a positive attitude towards blood donation need to be reinforced in order to encourage this cycle of positive attitude and donation. Finding the reward within the act of donating was the most commonly cited reason for donating blood as it is 'altruism.' other reasons, such as 'a group blood donation', 'obtaining blood donation certificate', 'curiosity, were cited as well. In previous studies, 'so friends can use it if they need it'[12][16-18], 'sense of obligation or a group effort'[24] 'because I am healthy'[25], 'personal interest and other's recommendation' [26][27] were reported as reasons for donating blood. That is, although there are individuals who donate out of altruism, quite a lot of people still donate because they need to, or out of sense of obligations, others' recommendation, or curiosity. Therefore, efforts to increase the number of group donations and to revamp the compensation gifts must continue. The

most commonly cited reasons for not donating blood was 'too tired, and donating blood is troublesome', followed by 'anxiety over the collection process', 'fear of disease infection via transfusion', and 'distrust for blood center'. Some research reported 'others' opposition' to be the most common response by the participants, followed by 'fear of needles' and 'fear for one's own health'[28-31]. Fear of needles and fear for one's own health do not vaporize all of a sudden. But continuous promotion seems to have offset the negative influence of discouragement from others around donors. Considering that the most popular reason for not donating blood is inconvenience, efforts should be made to minimize the inconveniences involved in blood donation. Fear of disease infection via transfusion and distrust for blood center are also issues that need to be addressed. The order of reasons for not having donating blood cited by non-donors was identical to that cited by donors. However, more non-donors tend to profess anxieties over the collection process or disease transmission potentials. The 2009 Blood Drive Awareness Survey indicated that 3 out of 10 non-donors do not even attempt to donate due to vague fear of needles or disease transmission. According to some research [24][32][33], 'lack of knowledge and information' topped the reasons for not donating, followed by fear for blood donation. As such, a solution to reduce the anxiety, fear, and distrust is needed. The present study identified 'lack of altruism', 'incorrect knowledge, 'lack of governmental support', 'lack of promotion', and 'lack of opportunities' as the reasons behind Korea's lagging blood donation rate compared with advanced countries. It was found 'incorrect perception (49%)' to be the most popular response among her participants, followed by 'lack of altruism', 'lack of promotion, and 'insufficient fulfillment of donor's desire[9]. It were identified 'lack of

opportunity', 'lack of governmental support', 'lack of altruism', and 'misguided perception of blood donation' as the reasons behind the low donation rate, in the order listed[34][37]. As seen here, the present study and previous studies do not report the same results[9][34]. Studies are more than a decade old, and as such, they may not accurately reflect today's circumstances or the characteristics of today's study participants. Although the order of cited reasons varied slightly from study to study, considering that 'lack of altruism', 'incorrect knowledge in donating blood', and 'lack of promotion' repeatedly appear, promotional and educational efforts need to be amped up. Finally, we would like to discuss measures which may help to increase the blood donation rate in Korea. In their studies, the previous studies emphasized the importance of promotional efforts[38], as well as educational efforts embedded in school curriculum [8][9][39]. However, financial reward was overlooked in comparison. Considering the weak correlation between the participants' knowledge and actual donation behavior observed in the present study, correcting misguided notions about blood donation through promotional efforts appears to be more critical than reinforcing knowledge through educational efforts. The present study also identified street marketing, TV and radio ads, education in schools, workplace, military, and visual ads (bulletin boards, posters, etc.) as effective tools (in the order listed) in influencing people's willingness to participate. Therefore, marketing strategies focused on street marketing, TV and radio ads will likely to have a positive impact on people's willingness to participate. Ideally, individuals would feel rewarded from donating blood even in the absence of financial rewards. Heralding altruism is critically important as Kim argued[26]. However, research indicates that many individuals tend to receive rewards in the forms

of certificates, souvenirs, and health check-ups[40]. As such, offering tangible rewards such as souvenirs, etc, while highlighting the importance of altruism need to be considered. It important not only to improve the university student's attitude towards blood donation through media advertising but also to reinforce the compensation offered to donors.

The present study presents a few limitations. First, the study participants were limited to university students in two local university. Second, questionnaire on knowledge may have been a bit difficult to understand. so it is likely that assessment of knowledge was inaccurate. Third, though we set out to analyze the association between knowledge, attitude, and participation using KAP model, we were only able to examine the correlation between these factors through cross-sectional study, and not the causality. Furthermore, we propose follow up study using the structure equation model to investigate the causality between blood donation and the potential factors.

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