A Study on the Biomedical Ethics among University Students with Consideration for Categories of Major

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Abstract

This study is performed to prepare baseline data searching of educational necessity and directions for the establishment of desirable ethics and has worked on surveying biomedical ethics among university students of healthcare departments and non-healthcare departments. This is a descriptive research based on inquiry of junior and senior students in four-year-course university located in C and D provinces.

The data gathering period is from 17th of March, 2014 to 31st of March, 2014. The research tool is a inquiry scale of surveying biomedical ethics which is developed by S. J. Kwon. It consists of a total of 66 questions and is Likert type 4 points scale. The reliability of this study is Cronbach's α = 0.82. We analyzed the data using SPSS/WIN 18.0 statistical program and used descriptive statistics, T-test, and ANOVA.

The results of the study are as follows. The overall average for biomedical ethics among health care department students is 140.18 (SD = 11.50) and that among non-health-care department students is 98.77 (SD = 12.99). This shows that nursing department students give higher statistical significance level against non-health-care department students but this result considerably includes discord factor which can change their values depending on situations and confusion in values. Thus, it is necessary to consider arbitration plan to promote biomedical ethics toward health care department students.

Keywords: Biomedical Ethics, University Student

1. Introduction

The development of medical science has contributed to respect for life, health maintenance, life extension and etc. The science has been developed and played a great role in comfort life, disease eradication, and conquest of pain and it has enabled to live a happy life¹. Like these, the development of medical science has realized what has been considered as impossible in the past like an incurable disease, infertility, spare-part surgery, life-sustaining treatment and etc. But, these innovative contributions have caused unexpected ethical problems confronting traditional bioethics and have changed human belief toward life value. And these have accordingly changed respect for human life, individual nature, and values toward human². Ethical criticism has been raised against

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the advanced medical procedures including life science and technologies contrary to the human dignity and it is required to have correct ethical views and decision making abilities in the place of medical service issuing ethical questions consistently which are new and not experienced before³. In other words, the change of biomedical ethics has been caused. The biomedical ethics examines decision process critically in ethical views of health and biology and it helps decision of ethical problems in all areas of medical science and affects affirmatively on works according to each personal ethical values⁴.

Each person utilizing the results from the development of cutting-edge life science & technology has come to question continuously about the ethical justification on them according to personal values from religion, social agreements, and right consciousness for human and these will be each person's confronted biomedical ethical problems. Along with the development of biotechnology and medical technologies, we are facing philosophical, ethical, and religious issues of creation of human life or human nature like brain-dead person, external fertilization, research on human cloning, and a sex exchange operation, which were not considered in the past and these problems have brought innovative changes to the life ethics in addition to destruction on the ecosystem. Thus, these problems make it difficult for health and medical service personnel to have a professional decision in the clinic while experiencing disagreements and conflicts of ethical views⁵. To solve the ethical problems of an organ transplant, a test-tube baby, and gene manipulation which were not considered in the past, we should be an advocate for the patients and their family and also get an appropriate decision. Thus, it is required to reestablish respects for human life dignity, values toward human, and ethical belief6. As the medical service personnel experience more conflicts of ethical views, intention of changing jobs is more related and it also significantly correlated to the satisfaction on jobs and the improvements on job performances7.

Therefore, when we have a valid standard of ethical and moral values, we can behave as biomedical experts and perform a proper decision for the high-quality service among various ethical conflicts⁸. In addition, knowledge acquisition and cultivation of senses related to biomedical ethics will be a very important education toward university students for a sustainable society. And it is essential to the health care department students who should help others for the decision of various ethical treatments in the medical field⁹. Ethical views of medical services on life helps to make a correct decision in ethical issues with medical treatment and provides criteria in the decision and performing services with a sound basis of personal ethical views.

Recently, it is on the increase that the liberal arts or major classes are opened with inclusion of biomedical ethics in several non-healthcare departments of universities¹⁰, but educations of biomedical ethics which are essential to solve ethical problems are not classified as independent classes¹¹. In particular, in the departments related to life science of the science college and the engineering college, it is known that bioethical education are not prepared well and it's time to institutionalize the bioethical education for all the college students from those departments¹². Thus, it is seriously required to develop classes and management programs for helping ethical decision and cultivating biomedical ethics and we hope to contribute to the provision of baseline data in preparation of improvement plan.

2. Research Objects and Research Method

2.1 Research Objects

The targets of this study are junior and senior students of healthcare and non-healthcare departments in two four-year-course universities located in C and D provinces. Overall 478 students have agreed to participate in this study and the surveys are carried by trained research assistants with a prior consent from chairperson. The survey period begins from 17th of March, 2014 to 31st of March, 2014. Totally 500 questionnaires are distributed and collected. Inadequate 22 questionnaires from the collected are excluded and 478 questionnaires (95.6%) are used in the final analysis of data.

2.2 Research Tool

This study has utilized a scale for measuring biomedical ethics of medical university students, which was developed by Kwon¹³. This scale has 4 points measure and consists of the following questions: 5 questions of right-to-life of fetus, 6 questions of artificial abortion, 7 questions of artificial insemination, 5 questions of fetal diagnosis, 5 questions of a newborn's right-to-life, 5 questions of euthanasia, 4 questions of an organ transplant, 5 questions of brain death, and 7 questions of human biotechnology. Totally, 49 questions are provided and higher score means higher level of biomedical ethics. The tool's original confidence level in developments is Cronbach's $\alpha = 0.76$ and the confidence level in this study is 0.82.

2.3 Data Analysis

The total number of collected questionnaires with completion was 478. We analyzed the collected data with descriptive statistics and T-test by SPSSWIN (ver. 18.0).

3. Research Findings

3.1 General Characteristics of Respondents

General characteristics of respondents are shown in Table 1. The female ratio among healthcare department students is 82.6% and it is greater than the male ratio of

Characteristics	Categories	Health-Care Majors (n = 293)	Non Health-Care Majors (n = 185)
Gender	Male	51(17.4)	88(47.6)
	Female	242(82.6)	97(52.4)
Grade	3	147(50.2)	97(52.5)
	4	146(49.8)	688(47.5)
Religion	Protestant	115(39.2)	96(51.9)
	Catholic	27(9.2)	2(1.1)
	Buddhist	10(3.4)	9(4.9)
	None	141(48.2)	78(42.2)
	Most active	23(7.8)	31(16.8)
Participation in religious activity	Active	48(16.4)	38(20.5)
	Somewhat active	40(13.7)	21(11.4)
	Least active	41(13.9)	17(9.1)

Table 1. General characteristics of respondents(N = 478)

17.4%. The distribution of respondents' religion consists of Protestant (39.2%), Catholic (9.2%), and Buddhist (3.4%) and the ratio of Protestant is higher than others. In case of non-healthcare department students, the female ratio is 52.4% and it is also greater than the male ratio of 47.6%. The religion distributions are Protestant (51.9%), Buddhist (4.9%), Catholic (1.1%) and No-religion (42.2%).

3.2 Biomedical Ethic Characteristics

Biomedical ethic characteristics is summarized in Table 2 and it consists of 4 categories about ethical values, hearing experience about biomedical ethics, conflict experience due to biomedical ethics, and the intent of attending education of biomedical ethics.

In case of healthcare department students, 45.4% students most highly answered occasional confusion about question of ethical values. And the next frequent answer is change depending on the situation with ratio of 30.4%. For the hearing experience about biomedical ethics, 87.7% of respondents answered yes. And 50.9% of respondents replied no conflict experience about biomedical ethics. When they were asked to attend education program for biomedical ethics, 70.0% of respondents answered yes.

Non-healthcare department students answered change depending on the situation with most high ratio of 37.3% and the ratio of answering yes about hearing experience

Table 2. Biomedical ethic characteristics (N=478)

Characteristics	Categories	Health-Care Majors (n = 293)	Non Health- Care Majors (n = 185)	
		n(%)	n(%)	
Ethical values	Very firm	67(22.9)	29(26.5)	
	Sometimes confused	133(45.4)	67(36.2)	
	Depends on the situation	89(30.4)	69(37.3)	
	Not realistic	2(0.7)	0	
The experience	Yes	257(87.7)	162(87.6)	
	No	16(5.5)	15(8.1)	
biomedical ethics	Not interested	20(6.8)	7(3.8)	
The experience of conflict for biomedical ethical problem	Yes	100(34.1)	89(48.1)	
	No	149(50.9)	78(42.2)	
	Not interested	41(14.0)	18(9.7)	
The intent to	Yes	205(70.0)	127(68.6)	
attend in class for biomedical ethics	No	39(13.3)	25(13.5)	
	Not interested	49(16.7)	33(17.8)	

of biomedical ethics is 87.6%. For the question of conflict experience with biomedical ethics, 48.1% of respondents answered yes. 68.6% of respondents replied affirmatively about the attendance of the education program of biomedical ethics but the ratio of no attendance is 13.5% and that of no interest is 17.8%.

3.3 Comparison of Biomedical Ethics among the Respondents

Table 3 shows comparison of biomedical ethics between healthcare and non-healthcare department students. When we rank sub-sections of biomedical ethics questionnaire, most highly ranked section is human biotechnology and most lowly ranked section is brain death for healthcare department students. In case of non-healthcare department students, human biotechnology is also ranked in the top and organ transplantation is ranked in the bottom.

With categorization as shown in the column of Table 3, comparisons between healthcare department students and non-healthcare department students show significant differences across all the items.

	Health-Care Majors (n = 293)	Non Health- Care Majors (n = 185)	t		
	M ± SD	M ± SD			
Right to life of fetus	15.57 ± 2.63	8.48 ± 2.53	28.98**		
Artificial abortion	16.15 ± 2.08	12.91 ± 2.24	16.07**		
Artificial insemination	20.29 ± 3.41	14.07 ± 3.24	19.78**		
Prenatal diagnosis of fetus	14.95 ± 1.81	9.58 ± 2.07	29.71**		
Right to life of newborn	15.90 ± 2.49	8.51 ± 2.65	30.71**		
Euthanasia	13.40 ± 2.24	10.47 ± 2.16	14.10**		
Organ transplantation	11.97 ± 2.13	7.46 ± 1.99	22.99**		
Brain death	11.56 ± 1.68	10.78 ± 1.70	7.66**		
Human biotechnology	20.36 ± 2.42	14.48 ± 2.45	15.67**		
Total	140.18 ± 11.50	98.77 ± 12.99	35.45**		

Table 3.Comparison of biomedical ethics (N = 478)

**p<.001

4. Discussion

At present, the developments of medical science and technology cause many unexpected conflicts of biomedical ethics. Accordingly, we live in the time of confusion with biomedical ethics in addition to healthcare and medical service personnel confronting the issues. The activities of science and technology are not evaluated as value neutral and they can be targets of value judgments from human behaviors. The ethics makes us to reflect on ourselves for the value judgments on those activities¹⁴. It is seriously required to establish bioethical values definitely for the health and medical service personnel to cope with ethical decision in the clinic service. Thus, this study identifies the necessity of fundamental education for a bioethical foundation in the college as a place pursuing quest for learning and aims to provide baseline material for exploring necessity of education and its direction of correct ethical view establishment through understanding consciousness of bioethics of college students from healthcare departments and non-healthcare departments. As research results, in the question of ethical views, the answer of occasional conflict is most high from healthcare department students and the next answer is change depending on the situation. In the research of bioethics from nursing college students by Yoo³ shows that the answer of change depending on the situation is most high but this result is different from that of this study. This may come from the difference of clinical experiences and conflict details between nursing students and healthcare students.

For the rank among bioethical sections, human biotechnology is answered most highly from both of healthcare and non-healthcare students and the research results targeting on nursing students by Moon¹⁵ show that right to life to newborn is answered most highly. Thus, the differences of bioethics between students group and clinical service staff can be found from this result. While the refresher educations of bioethics are prepared consistently to the medical service personnel, it is also required to provide bioethical educations to students as soon as possible. In the research by Shim¹⁶ targeting on students from sciences, humanities, art & physical education, and healthcare college, occasional change of their bioethics is answered most highly and 47.2% of students have answered yes in the question of experience of bioethical conflicts but 34.1% of healthcare students answered for the experience of bioethical conflicts in this study. This result of lowered ratio in the bioethical views may be caused by healthcare students' considering more on this issue during the courses and medical knowledge from the related courses and thus these may contribute more or less to their establishment of bioethics. Furthermore, active participation ratio on the possible education chances is 34.9% from the research by Shim¹⁶, but this study shows 70.0% from healthcare students and 68.6% from non-healthcare students. The higher ratio of participation will in this study comes from the religion of most target students and we can find the effects of religion on powering bioethics. On the other hand, in the lower-ranked items of bioethics, we can find that healthcare students show high ratio significantly but the research results by Shim gives higher ratio of bioethics from humanities students.

In the research by Yoon¹⁷ focusing on the differences of bioethics from college students, humanities students show higher levels of bioethics in the experiment on human life and thus the same reasoning will be possible in understanding results of this study but more detailed researches are still required. Except the case of resolute bioethics, 77.1% of healthcare students and 73.5% of non-healthcare students reflect the absence and the serious necessity of bioethical education in the current course works while still experiencing confusion of ethics. Therefore, through the provision of well-established bioethical education to the college students, they can cultivate fundamental respect for human and life and thus their bioethics cannot be weakened to the rapid science and technology developments. And each can be a member of society with a proper values for the issues of bioethics.

5. Evaluation and Conclusion

This study is significantly meaningful in the provision of baseline data inspiring appropriate biomedical ethics which should be prepared to the people engaged in the health and medical service. It is conducted by the analysis of biomedical ethics of healthcare department students and the comparison of biomedical ethics between healthcare department students and non-healthcare department students. Though healthcare department students show more significant level than non-healthcare department students do in the entire questionnaire items, conflicting elements causing confusion and change in the ethical values occupy greater portions. This can be explained as the absence of biomedical ethics to the people in the health and medical service.

Based on the findings above, we will propose suggestions as follows. First, It is necessary to introduce regular education program inspiring definite biomedical ethics to the healthcare department students. Second, extended research toward healthcare department students is required. Third, it is required for the non-healthcare students to have appropriate bioethical educations regardless of healthcare students. Fourth, additional research should be conducted to identify a number of variables affecting on biomedical ethics.

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