1. Introduction

1.1 Necessity of the Research

‘Biomedical Ethics’, a comprehensive term includes both medical ethics and biological ethics, deals with social ethical problems occurring from the development of Bioscience. Here, ‘medical ethics’ is about ethical aspect of medical behavior, point of view from both patient and people engaged in medical health. Compared to that, biological ethics is more broader concept, including Biotechnology such as problem from manipulation of genes and stem-cell research. This Biomedical Ethics problem is highlighted today because unexpected ethical problems that challenge traditional ethics of life and death are occurring as science and technology develop. Abortion, death with dignity, dealing organs, criterion of death, stem-cell research and genetic diagnosis or cure can be counted as those problems. As a part of solution, Biomedical Ethics research centers like Hastings Center and Kennedy Institute of Ethics (affiliated with Georgetown University) are founded and have been managed around USA and other nations since 1970s.

Moreover dozens of Biomedical Ethics journals are being published and encyclopedia of Bioethics was published in 1978. In case of South Korea, starting from The Korean Society for the Study of Medical ethics education in 1997, societies as The Society of Bioethics in 1998 and Council of Clinical Research deliberation of Korea in 2002 are founded and publishing journals regularly².

Meanwhile as one of medical professionals, not only the requirement of nursing ethics but also necessity of bioethics is increasing; bioethics deals with birth (sexual selection, gender selection, tissue grafts of fetus, external fertilization, surrogacy, human cloning, abortion, emergency contraceptive), death (euthanasia), criteria of death (Cardiopulmonary arrest), argument over brain death, will of one self’s life, discharging against medical advice, help committing suicide), treatment and nursing (clinical tests, organ transplant, gene therapy, changing forms, transsexual operation, medical insurance), etc.

To raise desirable ethical decision making ability of nurses, systematic Biomedical Ethics education which helps them to improve their ability to solve moral problems and to learn definite ethical value needs to be implemented³.
However, Biomedical Ethics education takes lots of time since this study investigates ethical norms among people with the basic metaphysical assumption about human nature as a moral being, human birth and death, circumstances and human, etc. Consequently in actual, education of Biomedical Ethics is not carried out sufficiently and even those current implements are not enough in the aspect of content diversity. To increase efficiency of at least current Biomedical Ethics education, categorizing characteristic of students is before anything else and customized education should follow, rather than the uniformed education; however related researches are not sufficient so far. That is, though research about Biomedical Ethics perception of\textsuperscript{5} and research of\textsuperscript{6}, insisting importance of ethical arbitration of fieldwork nurses are necessary either, objective and scientific investigation is required for deeper understanding; specific types and their characteristics of Biomedical Ethics perception, moreover what kind of perception each type pursues should be investigated. Q-method is a useful research method that can objectify highly abstract concepts which individuals might percept in different ways based on their experiences and perception\textsuperscript{7}. Therefore in this research, Q-method was applied to understand subjectivity types of value about Biomedical Ethics of nursing students, the future nurses. This research results are expected to be base data of future education on Biomedical Ethics more efficiently.

1.2 Objective of Research
This research is to provide base data to help planning and developing type-characteristically fit curriculum of Biomedical Ethics education on nursing students. Q-method was applied to investigate types of Biomedical Ethical value of nursing students, specific objective of the research is as follows:

First, typing subjective values of nursing students on Biomedical Ethics.

Second, analyze characteristic of subjective value type of nursing students on Biomedical Ethics.

2. Research Methods

2.1 Research Design
This research is cross-sectional study to investigate subjective value types of nursing students on Biomedical Ethics and to analyze characteristics of those types, using Q-method through one-to-one individual research and in-depth interview.

2.2 Subject of Study
In Q-method, which applied in this research, individual is a variable, not sample. Sample in Q-method is a Q-statement, selecting P-sample (respondents) is a lot easier than selecting Q-sample\textsuperscript{8} and number of respondents (P-sample) does not matter. Considering various aspects, this research selected 40 people as P-samples. Meanwhile as existing research proves statistically significant differences in value of Biomedical Ethics according as grades\textsuperscript{3}, P-samples of this research were selected in all grades from first to fourth grade. Convenience quarter sample among students who agreed to participate was used in specific sampling.

2.3 Research Tools
Research tools are composed of largely 3 parts; demographic data from 8 questions, 35 Q-statements to categorize subjectivity about Biomedical Ethics and in-depth interviews for strongly positive or negative Q-statements to find reasons for that.

2.4 Methods of Collecting Data
Specific data collecting process using Q-method is as follows. First, 38 male and female students who understand objective and importance of this study and filled separate ‘research participation consent form’ out were chosen as subjects from 1st graders to 4th graders of Nursing department of J University. Data collecting period was from 27 Oct, 2014 to 21 Nov, 2014, through sorting Q-samples and individual interviews using no-class vacant hours under department professor’s agreement. About 40~50 minutes were taken by each subject including in-depth interview and some reward was given to subjects in cash.

2.5 Q-Sample Categorizing and Data Analysis Method
Q-card and Q-sample distribution was prepared to categorize 34 Q-statements. In size of 10 x 6 cm card, each Q-statement was written and coated. Respondents were indicated to classify statements themselves by 9 point scale, from -4 to +4 on distribution table of the Figure 1, so that Q-analyze could be normally distributed by force. To minimize commonly made mistake during this process, 8 steps\textsuperscript{8} suggested was complied.
After data of 40 P-samples were all collected, respondents were coded into text file to use PC QUANL program. In the coding process, upon number of statement question on Q-sample distribution, 1 point was strongly oppose (-4), 5 points to neutral (0) and strongly positive (+4) was given. Moreover, specifically Q-factor analysis and principal component analysis were used in analyzing. As about 3 factors are generally used, this research compared different analysis results depending on the number of factors and selected the optimal model ultimately.

### 2.6 Ethical Consideration of the Research

This research was done after getting approval (Jeonju University IRB 2014-13) through deliberation of institutional bioethics committee to protect the subjects. Moreover, before the investigating process, subjects were informed object of the research, confidentiality of their responses and were told that there are no any danger even respond discontinues and also, they have right not to participate in the research on their own will. Additionally, data was collected after getting agreement in writing from subjects who agreed application of research participation notified through homepage.

### 3. Research Results

#### 3.1 Categorizing Q-type

Carried out Q-factor analysis through varimax rotation about subjectivity on Biomedical Ethics of the respondents using QUANL PC program, at first, 3 factors were selected and analyzed to figure out optimal number of the factors. Those 3 factors explain 45.79% of the total variable; which shows wide variety of the respondents. However as object of Q-research is not to strengthen power of explanation, total variable is undeterred by necessarily. Variable of each type was as following, 28.16% for type 1, 11.79% for type 2 and 5.84% for type 3; shows type 1 has 28.16% of explanation power so that it mostly explains perception of the respondents about Biomedical Ethics. Meanwhile 33.3% (5 of 15) among Q sorts included in factor 2 were put in the opposite extreme, those were separated as another factor so ultimately, In total, 4 types were classified.

For correlation between types, type 1 and type 4 was the highest as 0.612 and type 2 and type 4 showed negative correlation as -0.255, as in Table 1. Generally lower correlation between types is desirable in statistical method, however in Q-factor analysis, high correlation coefficient doesn't necessarily means no difference between two factors, rather provides beginning of making true hypothesis through connecting and separating theoretical concepts.

#### Table 1. Correlation matrix of 4 factors

|       | Factor1 | Factor2 | Factor3 | Factor4 |
|-------|---------|---------|---------|---------|
| Factor1 | 1       | 0.321   | 0.394   | 0.612   |
| Factor2 | 0.312   | 1       | 0.395   | -0.255  |
| Factor3 | 0.394   | 0.395   | 1       | 0.436   |
| Factor4 | 0.612   | -0.255  | 0.436   | 1       |

#### 3.2 Characteristic by Types and Interpretation

Among 38 subjects, 16 were type 1, 10 were type 2, 7 were type 3 and 5 were type 4; subject with higher factor weight in each type represents most prototypical or ideal person of that type in Table 4. To analyze and describe subjectivity on Biomedical Ethics by types, above all, characteristics by type was described around statements that respondents showed agreement/disagreement. Moreover, statement item that showed sharp difference between standard score of certain type and average standard score of rest of types was also analyzed and explained importantly. In addition while interpreting, contents of in-depth interview and demographical data in Q-sample analyzing process were referred as well. Subjects’ subjectivity types about Biomedical Ethics deducted from applying above methods are as follows (Table 2).


**Table 2.** Types, weights, demographic characteristics for P-samples

| Type   | Subject No. | Factor weight score | Gender | Age | Class | Religion | Influence | Perception | Seriousness |
|--------|-------------|---------------------|--------|-----|-------|----------|-----------|------------|-------------|
| Type 1 | 1           | .2668               | Female | 23  | 4     | Christian | Parents   | 3          | 3           |
|        | 3           | .5217               | Female | 20  | 1     | Catholic  | Parents   | 3          | 2           |
|        | 4           | .6112               | Male   | 20  | 1     | None      | Father    | 3          | 2           |
|        | 8           | .5567               | Male   | 20  | 2     | Christian | Parents   | 3          | 2           |
|        | 9           | .0894               | Female | 20  | 2     | Christian | Parents   | 3          | 3           |
|        | 10          | .4058               | Female | 21  | 2     | None      | Parents   | 3          | 2           |
|        | 12          | .6840               | Female | 20  | 2     | Catholic  | Parents   | 3          | 3           |
|        | 17          | .9345               | Female | 21  | 2     | Catholic  | Parents   | 3          | 3           |
|        | 21          | .5593               | Male   | 20  | 1     | Christian | Parents   | 3          | 3           |
|        | 22          | .6757               | Male   | 20  | 1     | Christian | Parents   | 3          | 3           |
|        | 23          | .2502               | Female | 21  | 3     | Catholic  | Parents   | 3          | 3           |
|        | 26          | .3828               | Female | 22  | 3     | Christian | Teacher   | 3          | 3           |
|        | 28          | .2329               | Female | 21  | 3     | None      | Friend    | 3          | 3           |
|        | 31          | .2072               | Female | 24  | 4     | Christian | Parents   | 3          | 3           |
|        | 33          | .6773               | Female | 23  | 4     | Christian | Parents   | 3          | 3           |
|        | 35          | .5074               | Female | 23  | 4     | Christian | Mother    | 3          | 3           |
| Type 2 | 5           | 2.0697              | Female | 20  | 1     | None      | Mother    | 2          | 3           |
|        | 7           | 1.0795              | Male   | 20  | 2     | None      | Mother    | 3          | 2           |
|        | 13          | .5816               | Female | 20  | 2     | None      | Mother    | 3          | 3           |
|        | 16          | 1.3768              | Female | 20  | 2     | None      | Mother    | 3          | 2           |
|        | 18          | .4813               | Female | 20  | 1     | Christian | Mother    | 3          | 2           |
|        | 19          | .2330               | Male   | 20  | 1     | Christian | Parents   | 3          | 3           |
|        | 24          | .5354               | Female | 22  | 3     | Other     | Father    | 3          | 3           |
|        | 25          | .9208               | Male   | 26  | 3     | None      | Parents   | 3          | 3           |
|        | 27          | .3889               | Female | 22  | 3     | Christian | Mother    | 3          | 3           |
|        | 36          | .7214               | Female | 23  | 4     | Christian | Parents   | 3          | 3           |
| Type 3 | 2           | .5431               | Female | 23  | 4     | Christian | Parents   | 3          | 3           |
|        | 11          | .9519               | Female | 22  | 2     | Christian | Parents   | 3          | 3           |
|        | 15          | 1.0823              | Male   | 20  | 2     | Christian | Parents   | 3          | 2           |
|        | 20          | .3179               | Female | 20  | 1     | None      | Parents   | 2          | 3           |
|        | 30          | .9534               | Female | 23  | 4     | Christian | Parents   | 3          | 3           |
|        | 32          | .3696               | Female | 22  | 4     | Christian | Mother    | 3          | 3           |
|        | 34          | .9979               | Female | 22  | 4     | Christian | Parents   | 3          | 3           |
| Type 4 | 6           | .3134               | Female | 20  | 1     | Christian | Parents   | 2          | 3           |
|        | 14          | .4306               | Male   | 22  | 2     | Christian | Parents   | 3          | 2           |
|        | 29          | .2644               | Male   | 24  | 3     | Christian | Friend    | 3          | 3           |
|        | 37          | .6674               | Female | 22  | 3     | None      | Parents   | 3          | 3           |
|        | 38          | .4517               | Female | 22  | 3     | None      | Parents   | 3          | 3           |

*Perception : Degree of perception on Biomedical Ethics (2 know not much, 3 know to some degree)

**Seriousness : Seriousness degree of Biomedical Ethics (2 not that serious, 3 rather serious)

### 3.2.1 Type 1 - Rational Conservatives

16 of 38 respondents (42.1%) belong to type 1, students of all year were included evenly; 4 from 1st grader, 5 from 2nd grader, 3 from 3rd grader and 4 from 4th grader. Compared to other types, 100% of respondents belonging to type 1 answered they 'know to some degree' about Biomedical Ethics. In addition, 6.3% of type 1 chose 'teacher' as a person who affected their values. As shown in Table 3, most strongly agreed items from the type 1 are 'Implementation and demand of fetus diagnosis checkup
always should be beneficial to the fetus and mother \( (Z = 1.80) \), ‘Healthcare workers should do their best in giving treatment to prematurely born babies because they can't support their life on their own \( (Z = 1.68) \), ‘Fetal diagnosis checkup should be done only when life and safety of mother and fetus are guaranteed \( (Z = 1.65) \), etc. On the other hand, most strongly disagreed items from type 1 respondents are ‘Determination of brain death from the committee composed of very learned members and socially venerable people (legally recognized) is reliable \( (Z = -1.46) \), ‘Artificial insemination should be provided in any circumstance, if the client wants it \( (Z = -1.33) \), ‘Even if there are risks, use of non-human donor organs, such as DNA transformed from a pig, is good because of the insufficient supply of organs \( (Z = -1.36) \), etc.

Table 3. Descending array of Z-scores (greater than ± 1) and item description for type 1

| Q-statement                                                                 | Z-score |
|----------------------------------------------------------------------------|---------|
| 13 Diagnostic screening tests of the fetus, such as an amniocentesis, should always be beneficial to the fetus and the mother. | 1.80    |
| 18 Medical personnel should do everything possible in the treatment of premature babies, because premature babies could not physically sustain life on their own. | 1.68    |
| 14 Diagnostic screening tests of the fetus, such as an amniocentesis, should be done only in complete safety of the fetus's and the mother's life. | 1.65    |
| 5 Elective termination of pregnancy is illegal in terms of belief of life respect, although it could be permitted in special cases such as pregnancy by sexual abuse, life threatening situation for mother, and congenital abnormality of fetus. | 1.59    |
| 19 A newborn baby who is possibly brain dead because of a severe cerebral hemorrhage, should still have everything done to save its life. | 1.21    |
| 3 The fetus is a genuine human being regardless of where it is in the pregnancy term. | 1.11    |
| 4 The human embryo and/or fetus cannot be used for experiments or research. | 1.06    |
| 1 Beginning of human life is from implantation of ovum and sperm. | 1.06    |
| 26 Organ transplantation should only be done if there is voluntary donation or brain death. | 1.01    |
| 33 Brain death should be regarded in terms of relieving mental-economical sufferings of the health care system and the family members. | -1.00   |
| 15 Diagnostic screening tests of the fetus can be done to determine the presence of congenital deformities or hereditary diseases, even if there's a risk of miscarriage. | -1.11   |
| 9 Surrogate is in contradiction of human dignity. | -1.33   |
| 8 Artificial insemination should be provided in any circumstance, if the client wants it. | -1.33   |
| 29 Even if there are risks, use of non-human donor organs, such as DNA transformed from a pig, is good because of the insufficient supply of organs. | -1.36   |
| 17 Medical personnel can discontinue a ventilator on a premature infant if the parents request to do so. | -1.46   |
| 34 It is reliable to accept the confirmation of brain death by a brain death confirmation committee, whose members are very knowledgeable and with social virtue. | -1.77   |

always should be beneficial to the fetus and mother \( (Z = 1.80) \), ‘Healthcare workers should do their best in giving treatment to prematurely born babies because they can't support their life on their own \( (Z = 1.68) \), ‘Fetal diagnosis checkup should be done only when life and safety of mother and fetus are guaranteed \( (Z = 1.65) \), etc. On the other hand, most strongly disagreed items from type 1 respondents are ‘Determination of brain death from the committee composed of very learned members and socially venerable people (legally recognized) is reliable \( (Z = -1.46) \), ‘It is better to use organ of genetically manipulated pigs or so even there exists danger of imbalance in organ transplant \( (Z = -1.36) \), etc. Also, items that type 1 showed significantly big difference compared to other types, that is, showed strong agreement of more than +1.00 in standard score gap were ‘Death brain should not be approved because human dignity comes from rationality and mind, not body’, ‘Healthcare workers should do their best in giving treatment to prematurely born babies because they can't support their life on their own’, ‘Fetal diagnosis checkup should be done only when life and safety of mother and fetus are guaranteed’, etc. Items showed strong disagreement of lesser than -1.00 in score gap compared to other types were ‘Surrogate parenting is against human dignity’, ‘It is better to use organ of genetically manipulated pigs or so even there exists danger of imbalance in organ transplant’, ‘A respirator supporting premature baby can be removed when parents want to’, etc.

### 3.2.2 Type 2 - Moderate Progressives

10 out of 38 (26.3%) belong to type 2; differentiated characteristic is that 70% of this type have no religion and that 60% answered their mother affected mostly in their value formation. As a guide, except for the type 2, more
than 80% of the respondents from all other types answered their parents affected in their value formation. Another characteristic is that they showed big difference, about 40% of them answering ‘not that serious’ for ‘How serious do you think Biomedical Ethical problems are?’ compared to other types that about 20% answered so. As shown in Table 4, most strongly agreed items from type 2 was ‘Though abortion is against respect for life, it can be approved in some special cases like pregnancy from sexual violence, congenital malformation and when the mother falls into a critical condition (Z = 2.00)’, ‘To help give up remedy is right if the patient or his/her family want to (Z = 1.57)’, ‘Nonconventional treatments can be stopped when the patient is imminent to physical death (Z = 1.41)’, ‘Remedy can be discontinued considering family members’ mental, financial pain (Z = 1.41)’, etc. On the other hand, most strongly disagreed items were ‘Extending life using every possible means even for the hopeless patient is right (Z = -2.29)’, ‘Death brain should not be approved because human dignity comes from rationality and mind, not body (Z = -1.52)’, ‘Baby hopeless to live due to severe congenital malformation should get every possible treatment to extend life (Z = -1.34)’, etc. Also, items that type 2 showed significantly big difference compared to other types, that is, showed strong agreement of more than +1.00 in standard score gap were ‘To help give up remedy is right if the patient or his/her family want to’, ‘Organ transplant is right in the aspect that organs of brain-dead patient can be transplanted to people who need them, when family of brain-dead patient agreed to the organ transplant’, ‘A respirator supporting premature baby can be removed when parents want to’, etc. Items showed strong disagreement

| Q - statement                                                                 | Z-score |
|--------------------------------------------------------------------------------|---------|
| Elective termination of pregnancy is illegal in terms of belief of life respect, although it could be permitted in special cases such as pregnancy by sexual abuse, life threatening situation for mother, and congenital abnormality of fetus. | 2.00    |
| It is good to terminate treatment at the request of the patient and/or family. | 1.57    |
| Extravagant medical treatments for extending life could be discontinued when one's biological death is near. | 1.41    |
| The patient's treatment can be discontinued in consideration of the family's mental and financial sufferings. | 1.25    |
| Organ transplantation from a brain dead donor is righteous in terms of the organ being transplanted to a person in need, as long as patient's family signed a consent. | 1.16    |
| The pregnant woman's right of choice should be the priority in terms of deciding whether she continues her pregnancy or not. | 1.12    |
| Permitting organ trade could cause medical fraud, such as an increase of medical inequity and the discontinuation of a recovering patient's treatment. | 1.08    |
| Diagnostic screening tests of the fetus cannot be done for research purposes, even with a full explanation and the parent's consent. | -1.06   |
| Elective termination of pregnancy is a homicide act because a fetus is an independent human-being from the moment of conception. | -1.11   |
| Selling or buying an organ should be permitted when it does not take a life, such as donating a kidney. | -1.12   |
| Artificial insemination should be provided in any circumstance, if the client wants it. | -1.27   |
| A newborn baby with a severe congenital defect should still have everything done to save its life. | -1.34   |
| Brain death shouldn't be a confirmation of death because human dignity is in the conscience and mind rather than just the physical observation. | -1.52   |
| Everything should be done to save a patient's life even if there is no hope of survival. | -2.29   |
of lesser than -1.00 in score gap compared to other types were 'Extending life using every possible means even for the hopeless patient is right,' 'Human embryo and fetus are also life, they cannot be used as subject of experiment or means of research,' 'Fetus is a complete human being regardless of a pregnancy period' and so on.

### 3.2.3 Type 3 - Reality Accepters

7 out of 38 (18.4%) belong to type 3; 1 from 1st grader, 2 from 2nd graders and 4 from 4th graders, differentiated from other types that it has relatively more 4th graders (57.1%) compared to other types. As shown in Table 5, most strongly agreed items from type 3 were 'Healthcare workers should do their best in giving treatment to prematurely born babies because they can't support their life on their own (Z = 2.12),' 'Surrogate parenting is against human dignity (Z = 1.75),' 'Allowing organ sale will worsen health care inequality and medical absurdity like treatment discontinuance of patient who has possibility to recover might increase (Z = 1.67), etc. On the other hand, most strongly disagreed items were 'Organs unrelated to life like kidney should be allowed to sale (Z = -2.22),' 'Surrogacy, sperm donation and egg donation should be highly encouraged in the aspect that they unburden pain of infertile couples (Z = -1.64),' 'Experiments and researches on embryo within 14 days after pregnancy should be allowed (Z = -1.27), etc. Also, items that type 3 showed significantly big difference compared to other types, that is, showed strong agreement of more than +1.00 in standard score gap were 'Surrogate parenting is against human dignity,' 'It is better to use organ of genetically manipulated pigs or so even there exists danger of imbalance in organ transplant,' 'Allowing organ sale will worsen health care inequality and medical absurdity like treatment discontinuance of patient who has possibility to recover might increase' and so on. Items showed strong disagreement of lesser than -1.00 in score gap compared to other types were 'Organs unrelated to life like kidney should be allowed to sale,' 'Surrogacy, sperm donation and egg donation should be highly encouraged in the aspect that they unburden pain of infertile couples, etc. Respondent number 15, showed the highest weighted factor of 1.0823 in type 3, is 20 years old 2nd graders, Christian and he picked his parents as people who affected mostly in forming his values.

### Table 5. Descending array of Z-scores (greater than ±1) and item description for type 3

| Q-statement                                                                 | Z-score |
|----------------------------------------------------------------------------|---------|
| 18 Medical personnel should do everything possible in the treatment of premature babies, because premature babies could not physically sustain life on their own. | 2.21    |
| 9 Surrogate is in contradiction of human dignity.                          | 1.75    |
| 28 Permitting organ trade could cause medical fraud, such as an increase of medical inequity and the discontinuation of a recovering patient's treatment. | 1.67    |
| 5 Elective termination of pregnancy is illegal in terms of belief of life respect, although it could be permitted in special cases such as pregnancy by sexual abuse, life threatening situation for mother, and congenital abnormality of fetus. | 1.37    |
| 10 Sperm or ovum shouldn't be bought or sold for artificial insemination.  | 1.03    |
| 14 Diagnostic screening tests of the fetus, such as an amniocentesis, should be done only in complete safety of the fetus's and the mother's life. | 1.01    |
| 34 It is reliable to accept the confirmation of brain death by a brain death confirmation committee, whose members are very knowledgeable and with social virtue. | -1.18   |
| 15 Diagnostic screening tests of the fetus can be done to determine the presence of congenital deformities or hereditary diseases, even if there's a risk of miscarriage. | -1.23   |
| 2 Research and experiments on the fertilized ovum within 14 days of pregnancy should be permitted. | -1.27   |
| 11 Donating sperm and/or ovum for a surrogate pregnancy should be encouraged in terms of relieving an infertile couple's suffering. | -1.64   |
| 27 Selling or buying an organ should be permitted when it does not take a life, such as donating a kidney. | -2.22   |
3.2 Type 4 - Unconditional Life Protectors

Type 4 is the type independently separated from the factor 2, containing 5 out of 38 (13.1%). There are no 4th graders here, 20% of respond showed ‘friend’ as a person who affected in value formation. Also, 40% of them had ‘no religion’; differentiated from the type 1 and type 3. As shown in Table 6, most strongly agreed item in type 4 were ‘Human embryo and fetus are also life, they cannot be used as subject of experiment or means of research (Z = 1.91)’, ‘Healthcare workers should do their best in giving treatment to prematurely born babies because they can’t support their life on their own (Z = 1.88)’, ‘Even baby considered as brain-death from severe cerebral should be cured as possible as can (Z = 1.54), etc. On the other hand, most strongly disagreed items from type 4 were ‘Determination of brain death from the committee composed of very learned members and socially venerable people (legally recognized) is reliable (Z = -1.80)’, ‘Brain-death should be admitted considering family members’ mental, financial pain (Z = -1.73)’, ‘Organ transplant is right in the aspect that organs of brain-dead patient can be transplanted to people who need them, when family of brain-dead patient agreed to the organ transplant (Z = -1.43)’, and so on. Also, items that type 4 showed significantly big difference compared to other types, that is, showed strong agreement of more than +1.00 in standard score gap were ‘Baby hopeless to live due to severe congenital malformation should get every possible treatment to extend life’, ‘Extending life using every possible means even for the hopeless patient is right’, ‘Human embryo and fetus are also life, they cannot be used as subject of experiment or means of research’. Items showed strong disagreement of lesser than -1.00 in score gap compared to other types were ‘Brain-death should be admitted considering family members’ mental, financial pain’, ‘Organ transplant is right in the aspect that organs of brain-dead patient can be transplanted to people who need them, when family of brain-dead patient agreed to the organ transplant’, ‘Nonconventional treatments can be stopped when the patient is imminent to physical death’ and so on. Respondent number 37, showed the highest weighted factor of 0.6674 in type 4, is 22 years old 3rd graders, has no religion and she picked her parents as people who affected mostly in forming her values.

| Q-statement                                                                 | Z-score |
|-----------------------------------------------------------------------------|---------|
| 4   The human embryo and/or fetus cannot be used for experiments or research. | 1.91    |
| 18  Medical personnel should do everything possible in the treatment of premature babies, because premature babies could not physically sustain life on their own. | 1.88    |
| 19  A newborn baby who is possibly brain dead because of a severe cerebral hemorrhage, should still have everything done to save its life. | 1.54    |
| 20  A newborn baby with a severe congenital defect should still have everything done to save its life. | 1.24    |
| 3   The fetus is a genuine human being regardless of where it is in the pregnancy term. | 1.08    |
| 25  The patient's treatment can be discontinued in consideration of the family's mental and financial sufferings. | -1.00   |
| 29  Even if there are risks, use of non-human donor organs, such as DNA transformed from a pig, is good because of the insufficient supply of organs. | -1.06   |
| 35  Organ transplantation from a brain dead donor is righteous in terms of the organ being transplanted to a person in need, as long as patient's family signed a consent. | -1.43   |
| 33  Brain death should be regarded in terms of relieving mental-economical sufferings of the health care system and the family members. | -1.73   |
| 34  It is reliable to accept the confirmation of brain death by a brain death confirmation committee, whose members are very knowledgeable and with social virtue. | -1.80   |
4. Conclusion and Suggestions

Nursing is ethical itself because it has good intention to keep enhance health and life of the patient and to boost humanity\(^9\). However human morality is not inborn, it should be educated and trained, unfortunately nurse without adequate education about moral or ethics undergoes lots of decision-making problems related to ethics in medical field that various values conflict\(^1\). For this, as Biomedical Ethical consciousness becomes base of solving ethical problems occurring in health and medical work fields, education of Biomedical Ethics is necessary for the nursing students\(^2\).

Related to necessity of Biomedical Ethics education on the nursing students, there are various researches like references\(^3-16\) that show positive effect of Biomedical Ethics education on Biomedical Ethics consciousness. Therefore, Biomedical Ethics should be included necessarily in curriculum of the nursing department and also, various ways have to be considered to efficiently improve problem-solving ability in ethically conflicted situations. One way of them is to plan Biomedical Ethics course appropriate for the characteristics by each type and to develop curriculum that Biomedical Ethics can be educated efficiently. For this, this research analyzed subjectivity type of values on Biomedical Ethics of the nursing students, the future nurses, using Q-method. As a result, they were categorized in 4 types. Type 1 is rational conservatives; they have flexibility in some part like agreeing abortion in case of unwanted pregnancy from sexual violence, but basically have severe and conservative Biomedical Ethics perception based on relatively strong religious Biomedical Ethics value. Type 2 is moderate progressives having relatively prospective perception about Biomedical Ethics; they are against of life continuing as an extension and organ sale but think organ transplant is possible, also, insisted it is right to help give up remedy and discontinue nonconventional treatments when the patient wants to. Type 3 is reality accepters; they experience of ethical problems and use of ethical decision-making models. Nursing Ethics. 2001; 8(5):432–47.

13. Choe K, Park S, Yoo SY. Effects of constructivist teaching methods on bioethics education for nursing students: A quasi-experimental study. Nurse Education Today. 2014; 34(5):848–53.

14. Kim IS. Effects of bioethics on the consciousness of bioethics of freshman nursing and health students. Journal of Korean Bioethics Association. 2013; 14(1):1–13.

15. Yoo MS, Shon KC. Effects of nursing educations on Biomedical Ethics awareness, moral sensivity and moral judgement of nursing students. Journal of Korean Bioethics Association. 2011; 12(2):61–76.

16. Yoo MS, Park HS. Effects of nursing ethics education on bioethics awareness and critical thinking disposition of nurses. Journal of Korean Bioethics Association. 2010; 11(1):51–60.

5. References

1. McGhee J, Perin KO. Quick look nursing: Ethics and conflict 2nd ed. Sudbury: Jones and Bartlett Publisher, Inc; 2008.
2. Koo YM. Biomedical Ethics, Gyeong-GI: Dongnyuk; 2013.
3. Kim EH, Lee E. A comparison of first-year and senior nursing students' ethical values and understanding of Biomedical Ethics. Korean Journal of Medical Ethics. 2010; 15(1):78–95.
4. Song MS, Han KI, Park CS. A study on the subjectivity of the ethics values of students majoring subjects related to rehabilitation. Journal of Speech and Hearing Disorders. 2003; 12(2):255–80.
5. Kwon SJ. A study on the consciousness of Biomedical Ethics of the nursing students and medical students: Focused on Daegu city and Gyeongsangbuk-Do. [MD Thesis]. Daegu; Keimyung University. 2003; 5(2):1–14.
6. Schroeter K. The nurse ethicist: An emerging role in advanced practice. Perioperative Nursing Clinics. 2007; 2(1):65–8.
7. Kim HKQ. Methodology. Seoul: Communication Books Inc; 2008.
8. Kim HKP. Sampling and Q sorting. Journal of Korean Society to the Scientific Study of Subjectivity. 2007; 15(1):5–19.
9. Jo KH, An GJ. Types of nurse's attitudes toward the aging process: A Q-methodological approach. Journal of Korean Academy of Nursing. 2007; 37(6):823–34.
10. Elsie B, Bertram B. Nursing ethics through the life span. 4th ed. New Jersey: Prentice Hall; 2002.
11. Cameron ME, Schaffer E, Park HA. Nursing students' experience of ethical problems and use of ethical decision-making models. Nursing Ethics. 2001; 8(5):432–47.
12. Moon M, Jaung A. Correlation between the nursing practice and consciousness of Biomedical Ethics of nursing students. Journal of Korean Bioethics Association. 2012; 13(2):49–62.
13. Song MS, Han KI, Park CS. A study on the subjectivity of Biomedical Ethics of the nursing students, the future nurses, using Q-method. As a result, they were categorized in 4 types. Type 1 is rational conservatives; they have flexibility in some part like agreeing abortion in case of unwanted pregnancy from sexual violence, but basically have severe and conservative Biomedical Ethics perception based on relatively strong religious Biomedical Ethics value. Type 2 is moderate progressives having relatively prospective perception about Biomedical Ethics; they are against of life continuing as an extension and organ sale but think organ transplant is possible, also, insisted it is right to help give up remedy and discontinue nonconventional treatments when the patient wants to. Type 3 is reality accepters; they experience of ethical problems and use of ethical decision-making models. Nursing Ethics. 2001; 8(5):432–47.

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