

Acquaintance with bioethical concepts and attitudes towards some bioethical issues: example of teacher education students

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ABSTRACT: In the effort to develop the form and content of the bioethical topics in the programs of the teacher studies, a pilot study was conducted in which the general knowledge of the bioethical issues was sought. The task of this study is to examine, on a sample of students at the Faculty of Teacher Education in Zagreb (N = 212): 1) To what extent is the subject of bioethics as discipline known to students, whether they know certain bioethical terms and what are their attitudes about some bioethical issues; 2) Is there a difference between students of the first and fifth year of study in attitudes and knowledge of the terms and subject matter of bioethics and 3) Is there a correlation between knowing certain bioethical terms and attitudes of respondents about some bioethical issues (euthanasia, abortion, right to reproduction). The results show that students are not well acquainted with the subject matter of bioethics as well as bioethical concepts and that there is no correlation between their knowledge and their attitudes about some bioethical issues. It is therefore concluded that the attitudes of respondents on bioethical issues (euthanasia, abortion, right to reproduction) are not determined by the knowledge of the subject but their value orientation (traditionalism/ liberalism), and the affective (emotional) dimension of the attitude plays an important role. Also, in the largest number of examined variables, there is no statistically significant difference between the first and fifth year students, suggesting the low presence of bioethical topics in the programs of teacher studies and the need to introduce courses and other content that would have the task of raising the level of competence of students in the field of bioethics.

Keywords: *bioethics; bioethical education; education; teacher study; bioethics subject matter; bioethical attitudes; civic education*

Introduction

Apart from the fact that it is conceived as a representation of the results of empirical research, this paper¹ seeks to explore the very possibility and the need to teach bioethics within the teaching studies. In addition, to studying the various programs of teacher education on universities at the Republic of Croatia, we should take into account the results of the research in bioethical issues conducted on the sample of students of the Teacher studies at the Faculty of Teacher Education of the University of Zagreb.

First, we need to define what we understand by the term »bioethical issues«, or better, how we recognize the content of the bioethics phenomenon within this research. By this we understand the following: (1) fundamental determinations of the understanding of the problem of life, as a biological, social and political phenomenon. (2) Understanding the problem of each human's relationship to the preservation of the whole of life. This is important especially from the point of view of the destruction of life that is produced by human action. In this respect (3), as a bioethical topic, we particularly discuss the problem of the relationship between society and the whole of life from the point of view of harmful influences on plant and animal species. Furthermore, it is certainly of bioethical interest and (4) the problem of the relationship between »biological« and »political«, which is gaining more importance in the economic structures of modern society. It is understandable, (5) it is also important to look at the content of basic bioethical topics, which is the problem of man's relationship to health. This understanding of the phenomenon of bioethics, and of bioethics as an intellectual movement, as well as the areas of academic knowledge, is based on the need to change the relationship to the overall existence, above all the biologically determined, but at the same time cultural and socially determined existence. There is no doubt that education is the key to changing social relationships, and so is the human relationship to the whole of life, and every change, especially when education is a word must originate from the roots and the root is primary education, hence the field of action of the teaching profession.

When it comes to study programs, then we are talking about university education programs where students, future teachers, prepare for primary work in elementary school, or nominally for primary school education. The study, as well as the general teacher's profession, is extremely interdisciplinary, and besides the acquisition of knowledge and mechanisms of managing that knowledge, it is directed at the formation of a person (as a teacher) and reflecting on the role of the teaching profes-

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ssion in society. Activity providers within the profession are always well-educated and motivated individuals, and this must be clearly defined for each educational program, especially in the area of primary education. When it comes to bioethical contents, we recognize them in courses in the fields of philosophy and sociology, as well as in the fields of science, history, geography and the field of health studies. Although in each of these areas there are topics that we recognize as bioethical, the courses in these areas do not usually have interpersonal contact, so many problems remain isolated or unilaterally displayed. This is also apparent from the results of our research, which shows that there is no significant difference between knowing the bioethical problem of students of the first and fifth year. We are already pointing to the need to introduce bioethical topics in teacher education, both in order to form higher quality study programs and to seek solutions to the serious problems facing modern humanity today.

Related to similar research here is an example of two cases of bioethics and education relations. The first lecture by Igor Lukić »Educational System and Bioethical Problems« was held on the 11th Lošinj's Days of Bioethics in May 2012 (Lukić 2012), in which the author puts up issues related to the teaching of bioethics at secondary level. Another important work is the *Bioethical Ecumene* by Ivan Cifrić, in which we can read the results of the research of the phenomena of life and human responsibility for life on the sample of students from several faculties of the University of Zagreb (Cifrić 2007). When it comes to the relationship between bioethics and the teaching, we do not know if research of this type has been conducted in Croatia.

There are a number of similar researches on the world scale, for example, Alam et al. (2012: 1–6) questioned to what extent students are familiar with the concept of *bioethics* and their attitudes about particular bioethical issues. They found that most students are familiar with the concept of *bioethics* (88%), but there are substantial variations in the type of study they are taking. Thus, law students and students of Islamic studies in their research (Alam et al. 2012: 4) showed much less familiarity with the concept of *bioethics* compared to other faculty students (only 43% were familiar with the term *bioethics*). Iglesias et al. (2014: 18) also examined the extent of knowledge about the following bioethical problems: eugenics, human cloning, abortion and euthanasia, and found that respondents knew least about eugenics. They also concluded that in most cases the neutral attitudes of students are associated with below-average knowledge of a particular bioethical theme (Iglesias et al. 2014: 18). It is important to emphasize that most of the similar studies were conducted on samples involving health care professionals and subjects studying at healthcare colleges, medical faculties etc. (e.g. Choe, Song and Kvang 2013: 403). On the other hand, many authors point out the importance of education in the field of bioethics for individuals from different fields (Hossne and Pessini 2013: 36), and not

just those who work in the health field. Additionally, the following, bioethical education enables young people to illuminate the presence of moral legitimacy in the field of scientific education as well as the application of acquired knowledge in professional situations (Iancu 2014: 74). In addition, the time of adolescence is also the time to ask great questions and the time when young people need to make great efforts to shape their role in the world and to build a sense of responsibility towards all forms of life (Bishop and Szobota 2015: 23). What is particularly important in bioethical education is that it takes place in three dimensions, a theoretical, specifically philosophical, practical one that is geared towards recognizing the actions of social systems, and applied, to the one who is facing the formation of concrete skills required for professional and civic action (Hubenko 2014: 38).

Let's add that, when it comes to teacher professions, some issues such as sustainable development are already part of existing education programs. There is, however, due to the subject and methodological coincidence, the contents of civic education and education in elementary schools. For example, one of the students' achievements at the end of the fourth grade of an elementary school is to know what sustainable development is and to understand the importance of a healthy environment in securing the well-being of the individual and society as a whole. In addition, teachers would have to acquire certain competences for the promotion of democratic values, and one of the competences in the field of vocational knowledge is the rule of the basic concepts of democracy² and the ability to think about those issues that we would call bioethical, e.g. the correctness of using GMOs, euthanasia etc. Therefore, this point of view *politically* challenged the question of how many teacher education students are competent / not aware of bioethical issues.³

² The Faculty of Teacher Education in Zagreb 2009/10 conducted research on the democratic competences of future educators and teachers (Velički and Šenjug 2010), which showed that this segment should be given more attention. It is worth noting that in this segment we also see the opportunity for bioethical education.

³ Since these problems come out of the scope of our work, it is necessary to mention them on the margins of our discussion. Namely, there is a significant link between educational issues, political concepts and bioethics. Social changes such as the destruction of a natural environment, disrespect of human rights, especially children's rights, or an ever-growing phenomenon of poverty, have emerged from the phenomenon of a democratic deficit (Krznar 2014: 337) and it is necessary to pay special attention to education in building democratic values quality political tools in the management of natural resources. This issue is also borne out by UNESCO's *Universal Declaration of Bioethics and Human Rights* adopted at the UNESCO General Conference in October 2005. For our needs, an important article 23, entitled *Bioethics Education, Training and Information*, advocating the State's obligation to participate in the formation of bioethical education at all levels of the education system. Thus (in accordance with Article 3 of the said *Declaration*) bioethical education would be in the pursuit of the preservation of human dignity and would serve as an effective protection of human rights.

If we agree with the thesis that education is the future of society, then we must also agree on the idea that quality education must, to a large extent, bear the features of contemporaneity and respond to specific queries in what is happening. Accordingly, it is necessary to conduct research in Croatia, which will serve as the basis for decision-making on the introduction of certain forms of bioethical education at the higher education level when it comes to teacher studies. We believe that the starting point in this journey is the study of what students recognize as bioethical contents in their education.

1. The emergence, development and role of bioethics in modern society

It is undeniable that we live in an extremely complex time: humanity has never lived in such a *dangerous gap* between, on the one hand, exceptional, primarily technologically-determined possibilities and, on the other hand, the dangers of such a way of life. It is understood that opportunities always give rise to dangers, but in this journey it is necessary to be guided by prudence as a fundamental principle of relation to others, especially towards life as a whole. It is precisely at this point of relationship that there is a problem, namely, a scientific and technical civilization that has become a planetary form of life, the perception of the biological determinants of the human being and of the society as a whole is more and more lost. The destruction of all human relationships with life, as well as the unstoppable growth of technology, opens the door to the destruction of life as a whole and the irreversible transformation of that *human being*. It is also to be said that every human action, if it is truly human, carries a *boundary*, therefore, a normative mechanism that prescribes the correctness and consent of acting at certain moments and certain procedures. The thinking structures we see in the West are shaped by ethical concepts in which »only« human is viewed as a moral object, as a being according to which we have duties and obligations. Other forms of life and life as a whole, despite numerous warnings about the deficiency and even the perniciousness of these concepts, remained outside this circle. The »classical« ethical structure recognized »just« human as a moral construct by interpreting the justification of its views by invoking the concepts of sociability, rationality, reciprocity, etc. Correcting the transformation of human society as well as the more serious, irreversible destruction of life, indicate that these constructions are not enough. In this respect, in the last decades, after the scattering of the destruction of life, numerous actors, movements, concepts, explanatory platforms, normative mechanisms and so forth have appeared, trying to explain the reasons for these phenomena and possibly give a new direction to the movement of mankind. One of these attempts is bioethics, or rather; many of these attempts have been named »bioethics«, which certainly speaks for the innovativeness

and pluralism of that concept. In this section, we want to bring only some basic information needed to understand the context of the research, as well as to design a quality platform for the interpretation of the results obtained.

Probably because a small area of knowledge such as bioethics has gone so far into a relatively short period of time in terms of conceptual and structural changes. It is undoubtedly noticed in the field of medicine that the lack of these »traditional« ethical concepts has been recognized (Čović 2011: 13). The ever-increasing »pressure« of technology in the field of diagnosis and treatment of the disease, as well as the increasing dependence of human life on technological constructions and artefacts, pointed to the need to build new models of explanation of phenomena and the environment of human life, as well as to formulate normative determinations of treatment in certain situations. Over time, on the one hand, due to the *complication* of the circumstances of human life and, on the other hand, due to the growing awareness of the obligation that man has towards all forms of life, and not just *human life*, comes the thematic spread of bioethics, and apart from medical problems it also includes ecological, demographic, technological, economic, and so on. On the other hand, in the methodological sense, there is the development of bioethics, which we can briefly describe as a path from the principality, through interdisciplinarity to pluriperspectivism, as we describe the methodological definition of integrative bioethics (Čović 2011: 20).

The mention of the term »bioethics« and even the formal formulation of a field of knowledge in which different scientific and value determinations would have touched has occurred significantly earlier. In this respect, the role of Van Rensselaer Potter (Muzur and Rinčić 2015), who had noticed many medical problems in the early 1970s and in the pursuit of the critics of dehumanization of science, formulated the concept of critique of dangerous knowledge in which he sought to determine the need to limit the work of technology to life precisely for the purpose of preserving the whole and wealth of life (Krznar 2016: 190). It is worth pointing out Potter's words, which says that modern man needs:

»(...) knowledge of how to use knowledge as a social good. The search for wisdom would be organized and should be promoted with respect to the survival and upgrading of the human species« (according to Krznar 2016: 195).

However, efforts to define the area and even to incorporate a value perspective into decisions about man's whole life originate from much earlier time (Krznar 2016: 202), and we can certainly find them in the thought and action of German pastor Fritz Jahr (1895–1953), who (1926) on the platform of Kantian ethics (Eterović 2017), forming the term bioethics and formulating the concept of bioethical imperative,

sought to design a new area of knowledge by giving it the name of bioethics. Or according to Jahr:

»Respect every living creature in principle as a purpose within themselves and preferably act with it as such« (according to Krznar 2016: 203).

We consider this point as the starting point for the development of European bioethics, which makes significant determinations in our regions in the design of the concept of integrative bioethics. It determines, in content sense, the important role of philosophy (primarily continental philosophical tradition) in the construction of bioethical structures, and in the methodological sense the concept of pluriperspectivism, as an attempt to include bioethical reflection in addition to scientific perspectives, including non-scientific, cultural, and artistic perspectives (Krznar 2016: 209). In understanding what bioethics wants to be, we will be guided by its next definition:

»Bioethics is an open area of encounter and dialogue between different sciences and activities, as well as different approaches and views of the world that gather to articulate, discuss and solve ethical issues related to life, for life as a whole and in every part of the whole, for life in all its forms, stages, phases and occurrences« (Jurić 2007: 83).

It remains to ask, if we agree with the above-outlined positions about the dangers of human activity to life as a whole, how we can make a change in the relation of man to life. The answer to the question is obvious, and its content is extremely difficult to implement, but the answer to the question is as follows: changes in education. In this regard, the issues of »bioethical education« are an integral part of all the efforts of bioethics since the earliest beginnings (Gosić 2005). However, it is not easy to define what bioethical education is and what it should be achieved, but it should certainly be noted that this education »should be in the service of meeting important social and individual aspects of education« and the goals of such education »should be defined as help for every student to discover their character and to test their readiness to make moral decisions« (Gosić 2005: 30–31).

In other words, the purpose of bioethical education would not only be to know some bioethical problems and constructions, but rather the possibility of orientation in concrete professional and even more personal life situations. We base this position on the fact that it is necessary to start from the fact that all actors in the education system do not move from the same point, nor are their knowledge (especially in information technology) something that can be levelled or even ignored in the education process. With this testimony we have touched the controversial area of fact and value relationship as it also appears in all educational processes. Prior to the formation of bioethical contents in teaching, specifically in the programs of

teacher studies, it is necessary to examine the contents of the knowledge and beliefs of the most important part of the education system, specifically the students of the teacher studies. The research we are talking about in this paper is devoted to this.

2. Research problem, objective and hypotheses of research

The aim of the research was to determine the extent to which students can determine the subjects of bioethics study as a discipline, to what extent are some concepts of bioethics known to them and what their attitudes to certain bioethical issues (dilemmas) are. Starting from the assumption that a higher level of knowledge in the field of bioethics will shape the personal attitudes of the respondents about some bioethical issues (dilemmas), we will examine the connection between the knowledge of the bioethical concept (in vitro fertilization, reproductive cloning, therapeutic cloning, moral status of the embryo, conscientious objection, dysthanasia) and attitudes of respondents about some bioethical issues (legal ban on abortion, legalization of euthanasia, legal restriction of reproductive rights) that are closely related to the mentioned terminology. We will also examine whether there are significant differences in the attitudes of bioethics and knowledge of the subject definition and bioethics concepts between students of the first and fifth year of study, mainly because it is assumed that the presence of bioethical topics in teacher study programs contributes to increasing the competences of students in the field bioethics and shapes their attitudes related to various bioethical issues (dilemmas). The following hypotheses were set:

1. Students are relatively well acquainted with the subject matter of bioethics, but are poorly acquainted with bioethical terminology.
2. Knowledge of the bioethical terms and bioethics' subject matter is statistically significantly correlated to the attitudes of respondents about some bioethical issues.
3. There are statistically significant differences between students of the first and the fifth year of study in the knowledge of the bioethical concepts, knowledge of the subject of bioethics and attitudes towards some bioethical issues.

3. Research methodology

3.1. Sample

The total number of participants in the survey is 212. All respondents are students of an integrated undergraduate and graduate Master's degree at the Faculty of Teacher Education at the University of Zagreb, whose program is implemented in three locations: Petrinja, Čakovec and Zagreb. Of the total number of respondents, 92 (43.4%) are studying in Zagreb, 65 (30.7%) are studying in Petrinja, and 55 (25.9%) in Čakovec. A total of 110 (51.9%) students of the first year and 112 (48.1%) of students in the fifth year were examined. The sample consisted of 13 males (6.1%) and 199 (93.9%) females. The survey included 45.68% of the total number of students in the first and fifth year of the teacher studies at the University of Zagreb. The age of the research participants is between 20 and 32, and on average 23 years.

3.2. The process of data collection

The data were collected using a non-standardized questionnaire formulated specifically for the purpose of this research. It was explained to the participants that the questionnaire was conducted for the purpose of the scientific project (research support) *The presence of bioethical topics in teacher and pre-school education studies* and that participation is anonymous and voluntary. Also, the interviewees emphasized that respondents may, if they change their minds, give up on completing the survey. The questionnaire was conducted in the academic year 2016/2017, in agreement with lecturers at the Faculty of Teacher Education who conducted surveys 15 minutes before their classes.

3.3. Operationalization of variables

Knowledge of bioethics as a discipline was measured by 12 statements. An example of one of the statements reads: *Bioethics studies phenomena from a philosophical perspective*. Three possible answers were offered: 1–correct, 2–incorrect, 3–do not know. For further statistical analysis incorrect answers, including the answer I do not know, are encoded with 1 and accurate to 0. Knowledge of bioethics terms was investigated using 21 dichotomous variables, and one example of the question reads: *Have you ever heard or read about the notion of eugenics?* The answers were: 1–yes, 2–no. The attitudes of respondents to some bioethical questions were examined with 15 variables. An example of one of the statements reads: *The state has no legitimate right to determine which individuals and couples are entitled to reproduction*. Likert's five-degree scale answers are offered: 1–fully disagree with the statement, 2–do not

agree with the statement, 3–do not know, 4–agree with the statement, and 5–fully agree with the statement.

3.4. Statistical data processing

The data collected were analysed using the SPSS 0.19 statistical program. Descriptive statistics for all variables in the questionnaire were calculated to test the first hypothesis. To test the correlation between the knowledge of the terms and attitudes of the respondents on some bioethical questions, the Point Biserial correlation coefficient was used, since the correlation of binary (nominal) variables with the Likert type variables are examined. A Chi-square test was used to ascertain whether there was a statistically significant difference in the knowledge of bioethics as a subject and knowledge of the terms between the students of the first and fifth years of study. In this case Yates correction was used since the tables were 2×2 , that is, the relationship between two dichotomous, nominal variables. The Mann-Whitney U test was used to test differences in attitudes about some bioethical issues between students of the first and fifth year of study.

4. Results

Table 1 shows the frequencies and percentages of variables measuring how many students are introduced to the relevant bioethics definition as an interdisciplinary area. It is noticed that students have relatively low knowledge of bioethics subject matter because the number of students who give accurate answers exceeds 50% of only four examined variables (claims) of the total number of 12. The question *Bioethics is studying the moral aspect of man's relationship to the whole ecosystem* has the most accurate answers (59%). Claims where respondents have the largest number of incorrect answers (in percentage of more than 80%) are: *Bioethics is part of philosophy*, *The name »bioethics« began to be widespread in the early 70s of the 20th century*, *Bioethics is a set of international and national laws and directives on the treatment of living organisms*.

Table 1. Distribution of students according to answers on questions about bioethics' subject matter

Claims	Correct answer		Incorrect or I don't know answer	
		%		%
Bioethics studies ethical issues related to medicine and health.	101	47.60	111	52.4
Bioethics studies ethical issues related to the human's impact on the environment.	117	55.2	95	44.8
Bioethics studies the moral aspect of man's relationship to animals and plants.	114	53.8	98	46.2
Bioethics encompasses civil activism for the purpose of environmental protection.	88	41.5	124	58.5
Bioethics studies the moral aspect of human relationships to the whole ecosystem.	125	59.0	87	41.0
Bioethics studies the moral dimensions of science-fantasy scenarios – cyborgs, human clones, genetically-engineered people, etc.	71	33.5	141	66.5
Bioethics studies phenomena from a philosophical perspective.	83	39.2	129	60.8
GMO is a bioethical subject.	107	50.6	105	49.5
Incorrect claims				
Bioethics is part of philosophy.	30	14.2	182	85.8
The name »bioethics« began to be widespread in the early 70s of the 20 th century.	25	11.8	187	88.2
Bioethics is a set of international and national laws and directives on the treatment of living organisms.	23	10.8	189	89.2

Table 2 shows frequencies and percentages on variables that measure how much students are familiar with the given bioethical concepts. It is noted that in percentage of students, more than 50% of students have heard of only 7 bioethical terms (out of a total of 21). More than half of the students never heard of the other 14 terms. The concepts of which the largest number of students had heard were: *treatment with stem cells* (93.4%), *in vitro fertilization* (86.3%) and *illegal organ trade* (98.6%), while the smallest number of students heard about the term *dysthanasia* (28%) and *specie-sism* (24%), which suggests a better understanding of terminology that is often used in the media and in the conversational language and less knowledge of terminology less widely used.

Table 2. Distribution of students according to knowledge of certain bioethical concepts

Concepts	I have heard of / read about this concept		I have not heard of / read about this concept	
		%		%
Ecological footprint	80	37.7	131	61.8
Therapeutic cloning	106	50.0	106	50.0
Stem cell treatments	198	93.4	14	6.6
Biocentrism	111	52.4	101	47.6
Xenotransplantation	32	15.1	178	84
<i>In vitro</i> fertilisation	183	86.3	29	13.7
Anthropocentrism	91	42.9	120	56.6
Informed consent	83	39.2	129	60.8
Dysthanasia	28	13.2	184	86.8
Pathocentrism	47	22.2	165	77.8
Conscientious objection	138	65.1	74	34.9
Bioethical committee	48	22.6	163	76.9
Deforestation	104	49.1	108	50.9
Moral status of an embryo	138	65.1	71	33.5
Reproduction cloning	161	75.9	51	24.1
Transhumanism	97	45.8	114	53.8
Deep ecology	40	18.9	171	80.7
Illegal organ trade	209	98.6	3	1.4
Genetic detection	83	39.2	129	60.8
Speciesism	24	11.3	188	88.7
Eugenics	69	32.5	143	67.5

Table 3 shows descriptive indicators of variables that questioned student attitudes about some bioethical issues. The students agree to the greatest extent with the following statements: *Excessive forest harvesting has negative consequences for man and human society* ($M = 4.73$, $SD = 0.54$) and *Plants and animals have the right to life* ($M = 4.70$, $SD = 0.50$). It is also important to point out that the arithmetic mean on the following variables of *The State is not legitimate to determine which individuals and couples are entitled to reproduction* ($M = 4.01$, $SD = -09.8$), *In case of unwanted pregnancy, women have the right to decide on abortion* ($M = 3.89$, $SD = 1.28$), *In case of great suffering due to illness, the patient has the right to decide on his own death* ($M = 4.21$, $SD = 1.02$) indicates greater orientation of students towards liberal values by the issue of legal regulation of abortion, euthanasia and reproductive rights. It is said to be more about worldview and value orientation than about bioethical issues, but these as-

pects were not a part of our research. Certainly, it is of the utmost importance for these topics that knowledge of the issues is the basis of every critically intoned and informed discussion.

Table 3. Descriptive statistics of variables used in research: Student attitudes about some bioethical issues

	Min	Max	M	SD	Skewness	Kurtosis
Reproduction cloning should be illegal all over the world.	1	5	2.90	1.02	0.10	0.33
Gentechnically modified crops reduce biodiversity.	1	5	3.21	0.82	0.20	0.76
It has been proven that genetically modified food is detrimental to human health.	1	5	3.64	1.01	-0.48	-0.20
The living and inanimate nature of the ecosphere works on one another.	3	5	4.33	0.68	-0.55	-0.78
Sustainable development generally does not require stopping the development of technology.	1	5	3.27	0.78	0.14	0.89
Man is not responsible for all living beings, but only for those who can feel pain.	1	5	1.69	1.03	1.70	2.43
If the patient, after informing, does not agree to a medical procedure, he or she must be confirmed by a signature, the doctor may not take the procedure.	1	5	4.51	0.75	-1.77	3.36
It is unacceptable that biotechnology can create human and animal hybrids.	1	5	3.44	0.96	0.15	-0.24
Excessive harvesting has negative consequences for man and human society.	2	5	4.73	0.54	-2.29	6.22
Plants and animals have the right to life.	3	5	4.78	0.50	-2.33	4.63
It is unacceptable to prevent the generation of incapable and encourage the generation capable of improving the »genetic image« of the peoples or races.	1	5	4.03	1.11	-1.00	0.28
The state has no legitimate right to determine which individuals and couples are entitled to reproduction.	1	5	4.01	1.16	-0.98	0.03
In case of unwanted pregnancy, women have the right to decide on abortion.	1	5	3.89	1.28	-1.05	0.05

Doctors and medical staff are obliged to preserve human life, and even in the final stage of incurable illness.	2	5	4.41	0.79	-1.11	0.21
In the event of a great suffering due to illness, the patient has the right to decide on their own death.	1	5	4.21	1.02	-1.30	1.17

Point Biserial correlation coefficients showed that there was no statistically significant correlation between the knowledge of certain bioethical terms (*in vitro* fertilization, reproductive cloning, therapeutic cloning, moral status of an embryo, conscientious objection, dysthanasia) and attitudes on some bioethical issues (legal ban of abortion, legalization of euthanasia, legal restriction of the reproduction rights).

The results of a Chi-square test have shown that there are no statistically significant differences between students in the first and fifth year with regard to knowledge of bioethics as an interdisciplinary area. The statistically significant difference between students in the first and fifth year is in the recognition of the notion of ecological footprint (shown in *Table 4*). Students of the first year were more likely to hear or read about the notion of *ecological footprint* of students of the fifth year of study. There was no significant difference between the mentioned groups of participants on the knowledge of other bioethical terms.

Table 4. The results of Chi-square test: Differences in knowledge of bioethical terms between students of the first and fifth year of study

	I have heard of / read about the notion of ecological footprint	I have not heard of / read about the notion of ecological footprint	Yates correction	df	p
	Frequencies				
The first year students	49	61	4.550	1	.033
The fifth year students	29	70			

The results of the Mann-Whitney U test presented in *Table 5* show that there are statistically significant differences ($p < 0.05$) between students in the first and fifth year in the views of two bioethical problems: (1) Excessive logging and (2) The right of women to abortion, while the other variables with which the examined attitudes did not significantly differ in the students of the first and fifth year of study. Students in the fifth year of the study are more likely to find that excessive logging has negative effects on man and that women have the right to decide on abortion.

Table 5. The results of the Mann-Whitney U test: Differences in attitudes of students of the first and fifth year of study

	Excessive logging has negative consequences for man and human society		In case of unwanted pregnancy, women have the right to decide on abortion	
	Mean ranks	Sum of ranks	Mean ranks	Sum of ranks
The first year students	97,67	10548,00	96,30	10400,00
The fifth year students	111,88	11188,00	113,36	11336,00
U	4662,000		4514,000	
z	-2,323		-2,159	
p	,020		,031	

5. Discussion and Conclusion

There is no doubt that modern society is going through a series of changes that can essentially transform *the human* as this is built during the history of mankind. Also, there is no doubt that education, especially early education, is a platform for discussion and profiling of topics and methods that will be a part of the awareness of the coming generations. Education is the only rational guarantee of the content of consciousness. Bioethics, as a technical response to time queries, and at the same time as an effort to shape a new consciousness, in teacher study programs, is an extremely important component. The integrative mechanism of bioethics as well as its openness to various thematic and methodological definitions corresponds to a good extent with the character of the teaching as a subject of education and, at the same time, as a profession. In this research, we tried to show the link between bioethics and teaching as an area of academic education and as a very important profession in society. Bioethics can be understood as an interdisciplinary and pluriperspective area of knowledge, but at the same time as a new social movement. Numerous challenges brought by the modern way of life, as well as the increasing role of technology in the life of a modern man, bring us many questions. It is beyond doubt that these issues are also a challenge for academic education programs, especially those in the field of teaching. For example, this research has shown that sample respondents have not heard about two thirds, mostly vocational concepts in the field of bioethics (used in this study), which confirms that they do not have adequate education in the field of bioethics.

Furthermore, the results also show an extremely low level of knowledge of bioethics as a subject matter, as more than half of the students respond accurately to only one third of the questions asked. In addition, it is very important to note that there is no statistically significant difference ($p < 0.05$) among the students in the first

and fifth year in knowing most of the bioethical problem (subject definition and conceptualization). Such a result indicates the insufficient inclusion of bioethical contents in teacher study programs since the level of knowledge on these subjects did not significantly increase in the number of students who completed the studies compared to those at the beginning of the study. Students in the fifth year were more *pro-choice* on the right to abortion than students of the first year ($p = 0.031$) and to a greater extent consider that excessive logging negatively affects humans and human society ($p = 0.02$). It is believed that this result is not a consequence of the inclusion of the mentioned topics, as a *cross curricular topics* in the teaching content of the teacher studies, because no significant correlations were found between knowing the bioethical concepts and attitudes about some bioethical issues. Accordingly, hypothesis 1 (*Students are relatively well acquainted with the subject matter of bioethics, but are poorly acquainted with bioethical terminology*), as well as hypotheses 3 (*There are statistically significant differences between students of the first and fifth year of study in the knowledge of bioethical concepts, knowledge of the subjects of bioethics and attitudes towards some bioethical issues*) are only partially confirmed.

No significant correlation between the attitudes of respondents (about euthanasia, abortion, reproductive rights) and their level of knowledge in the field of bioethics ($p 0.05$) and hypotheses 2 (*Knowledge of the bioethical terms and bioethics' subject matter is statistically significantly correlated to the attitudes of respondents about some bioethical issues*) was confirmed. It is therefore questionable whether individuals would change their attitudes about some bioethical doubts even if they were better educated in the field of bioethics. Namely, some research has shown that value orientations largely determine the attitudes of respondents about the issues mentioned. For example, although not quite coincident with our research, ten Have (2013: 16) has noticed that bioethics in some societies is essentially determined by religion and the traditional context. The assumption is that certain groups, regardless of the level of knowledge of bioethical issues, are a priori advocating liberal and traditional perspectives, which reduces the prospects for constructive dialogue in the public as well as achieving consensus on some bioethical issues.

Furthermore, the attitude has its affective dimension that is associated with a positive or negative emotional relation to the object of the attitude and is separate from the cognitive component of the attitude that relates to objective knowledge of the object of the attitude (Breckler 1984: 1191). It is possible that the emotional component is an important factor in forming the attitudes of students participating in this research. Other studies also show that respondents respond faster to emotions rather than to knowledge of the object of the attitude (Ćirić and Ignjatović 2014: 191). According to some authors, the relative dominance of affective relation to the cognitive component often depends on the information we first adopted, and cognitive

appeals affect cognitive attitudes, but not those based on the affect (Ćirić and Ignjatović 2014: 191).

Precisely because of all the above, especially bearing in mind the ever more significant development of bioethics in all academic areas, the results of this study indicate the necessity of introducing more bioethical contents into the programs of teacher education.

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POZNAVANJE BIOETIČKE PROBLEMATIKE I STAVOVI O NEKIM BIOETIČKIM PITANJIMA: PRIMJER STUDENATA UČITELJSKIH STUDIJA

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SAŽETAK: U nastojanju oko osmišljavanja forme i sadržaja bioetičke tematike u programima učiteljskih studija provedeno je pilot-istraživanje u kojemu se nastojalo ispitati općenito poznavanje bioetičke problematike. Zadaća istraživanja bila je, na uzorku studenata Učiteljskog fakulteta u Zagrebu (N=212), ispitati: 1. U kojoj je mjeri studentima poznato predmetno određenje bioetike kao discipline, jesu li im poznati određeni bioetički pojmovi te koji su njihovi stavovi o nekim bioetičkim pitanjima; 2. Postoji li razlika između studenata prve i pete godine studija u stavovima i poznavanju pojmova i predmetnog određenja bioetike; i 3. Postoji li povezanost između poznavanja određenih bioetičkih pojmova i stavova ispitanika o nekim bioetičkim pitanjima (eutanazija, pobačaj, pravo na reprodukciju). Rezultati su pokazali da studenti slabo poznaju predmetno određenje bioetike, kao i bioetičke pojmove, te da ne postoji povezanost između njihova znanja i njihovih stavova o nekim bioetičkim pitanjima (dvojbama). Stoga se zaključuje da stavove ispitanika o bioetičkim pitanjima (eutanazija, pobačaj, pravo na reprodukciju) ne određuje poznavanje spomenute tematike već njihove vrijednosne orijentacije (tradicionalizam/liberalizam), a pretpostavlja se i da afektivna (emocionalna) dimenzija stava igra važnu ulogu. Također, kod najvećega broja ispitivanih varijabli ne postoji statistički značajna razlika između studenata prve i pete godine studija, što upućuje na slabu prisutnost bioetičkih tema u programima učiteljskih studija i potrebu uvođenja kolegija i drugih sadržaja koji bi imali zadaću podignuti stupanj kompetentnosti studenata u području bioetike.

Ključne riječi: *bioetika; bioetička edukacija; obrazovanje; učiteljski studij; predmetno određenje bioetike; stavovi o bioetičkim pitanjima; građanski odgoj*

