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# The Effect of a Compulsory Curriculum on Ethical Attitudes of Medical Students

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## ABSTRACT

*The purpose of the present study was to assess the influence of a compulsory curriculum on first-year medical students. The ethical attitude study was performed at the School of Medicine, University of Rijeka, Croatia. The samples consisted of 171 medical students (68 males and 103 females) interviewed at the beginning of the first year of studies. Some of them, namely 143 (56 males and 87 females) were interviewed again at the end of the same academic year. Data were analysed by applying factor analysis under principal component model and varimax criterion as the rotation model. The results clearly show that the current compulsory curriculum without formal ethical education has a limited influence on first-year medical students. That points to the obvious necessity to implement the medical ethics in the course of medical education.*

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## Introduction

People meet ethics or morality very early, first in their own family, later through education. However, if ethics and its principles are not studied formally they tend to remain at the »personal« level which can hardly be considered as adequate, particularly if one is engaged in general activities of public interest, such as health care<sup>1</sup>. Developed countries do not discuss necessity of ethical education<sup>2-5</sup>. Their interest is in developing and improving methods of acquiring ethi-

cal principles by medical students and specialists of medicine<sup>6-16</sup>.

Medical ethics is introduced into the curriculum of the second year of medical education in the School of Medicine, University of Rijeka. First-year medical students can acquire a limited knowledge of medical ethics through some related lessons (Medical Genetics, History of Medicine and Social Medicine), or if they are lucky enough to meet a lecturer particularly interested in ethical issues.

In an attempt to encourage the teaching of ethics in the educational program,

**TABLE 1**  
QUESTIONNAIRE ON ETHICAL ATTITUDES

Question number	The investigated problem
1	A genetician may influence the choice of a spouse
2	Individuals with high risk for their progeny may be forbidden to reproduce
3	Coercive sterilization of people with high risk for the fetus is ethically justifiable
4	Parents should be allowed to choose the sex of their child
5A	The parents can decide on the quality of life of their unborn and born child
5B	A professional person (e.g. genetician) can decide on the quality of life of an unborn and born child
6	Both mother and father decide on medically indicated abortion
7	Written consent of both husband and wife is needed for heteroinsemination
8	The cause of sterility defines priority for in vitro fertilization (IVF)
9	Social and psychological factors can define priority for IVF
10	The child conceived through IVF, or heteroinsemination, or the one with surrogate mother, has the right to find out his/her origin
11	Screening tests in new-borns are ethical only if the disease is curable
12	Can an aggressive, frequently expensive therapy be imposed in cases of uncertain and passing results?
13	Induced abortion is authorised by a multidisciplinary commission (physician, sociologist, theologian, jurist, psychologist)
14A	Only a professional person may decide on interruption of a medical treatment
14B	Only the patient or the parent may decide on interruption of a medical treatment
15	Euthanasia is ethically justifiable
16	Physicians are obliged to medical confidentiality even in cases of drug addiction and sexual abuse
17	Physician are obliged to medical confidentiality in cases of AIDS

the authors wanted to find out to what extent the compulsory curriculum of the first year of studies of medicine affected ethical attitudes of a medical student population.

### Material and Methods

The study of ethical attitudes was performed at the School of Medicine, University of Rijeka, Croatia.

The sample consisted of 171 medical students. The students (68 males and 103

females) were interviewed at the beginning of their first year medical education. 143 of them (56 males and 87 females) were interviewed once again at the end of the same academic year. The difference in the number of the students was due to the difference in the number of students attending the lecture on the day of survey.

Aiming at assessing whether compulsory curriculum influences their ethical attitudes and, if it does, to what extent, the authors asked the students to answer

**TABLE 2**  
QUESTIONNAIRE ON ETHICAL ATTITUDES, ROTATED FACTOR PATTERN,  
VARIMAX ROTATION METHOD

Q. No	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
1	0.50466*	-0.13357	0.06950	-0.17723	-0.05571	0.03888	-0.35786	-0.14968
2	0.79523*	-0.06295	-0.00751	0.17993	0.11425	0.06432	-0.06338	0.01501
3	0.78910*	-0.07092	-0.14970	0.03791	-0.09374	-0.05204	0.08139	0.06086
4	-0.01108	-0.14899	-0.11871	0.24846	-0.11134	0.38716	0.56215*	-0.01449
5A	0.06085	-0.05219	0.16700	-0.26301	0.10442	-0.13191	0.74474*	0.07522
5B	0.61829*	0.25126	0.17141	-0.00035	0.07930	-0.07800	0.17383	0.15668
6	-0.03767	-0.05745	0.68669*	0.02824	0.05147	0.13092	-0.01615	-0.01514
7	-0.00357	0.00348	0.71947*	0.00623	-0.12564	0.12824	0.08400	-0.18195
8	0.04563	-0.00000	-0.09907	0.10137	-0.07259	-0.04362	0.11828	0.73804*
9	0.12374	-0.09539	0.02106	-0.14981	0.18536	0.57312*	-0.13651	0.54283*
10	-0.05683	0.09069	0.23326	0.01210	-0.06125	0.76362*	0.03775	-0.09388
11	0.19196	-0.01745	-0.00703	-0.08541	0.76661*	-0.07066	-0.07079	0.16694
12	0.16741	0.00751	0.00217	-0.09722	-0.72762*	-0.02788	-0.11267	0.19042
13	0.15732	-0.10404	0.48588*	0.29521	0.11498	-0.13824	0.03999	0.28762
14A	0.10936	0.01286	-0.06207	0.75292*	0.06909	-0.02030	0.07884	0.02758
14B	0.02302	0.00304	-0.24085	-0.69878	0.07842	-0.03231	0.17955	-0.03920
15	0.29879	-0.03735	-0.34563	0.00221	0.31977	0.20231	0.26172	-0.33357
16	-0.01734	0.87140*	-0.02824	0.01237	-0.03759	0.10437	-0.05678	0.04135
17	-0.02297	0.87684*	-0.07701	-0.01025	0.00434	-0.06889	-0.03426	-0.08043

questions anonymously. The goal was to estimate changes of student opinion at the group level.

The questionnaire comprised 17 questions (Table 1). Students put their answers on the 10 grade scale (1st grade = by all means; 10th grade = in no way). The same questionnaire was applied at the beginning and at the end of academic year.

The factor method under principal component model and varimax criterion rotation was applied in data analysis<sup>17</sup>.

## Results

After factorization of the data matrix, the eight principal components and 62% of information from the initial set of data (answers to the questions from the ques-

tionnaire – Table 1) were retained. The rotated factor pattern is presented in Table 2.

Factor 1, defined by questions 1, 2, 3 and 5B, can be named »the professional-genetician's role in human reproduction«.

Factor 2, defined by questions 16 and 17, can be named »medical confidentiality«.

Factor 3, defined strongly by questions 6 and 7, and weakly by question 13, can be named »father's and/or multidisciplinary commission's role in making decisions on induced abortion«.

Factor 4, defined by questions 14A and 14B, can be named »decision on interruption of treatment «.

Factor 5, defined by questions 11 and 12, can be named »screening tests and therapy«.

Factor 6, defined primarily by question 10 and partly by question 9 can be named »child's right to find out his/her origin«

Factor 7, defined by questions 4 and 5A, can be named »parents right of decision-making«.

Factor 8, defined by questions 8 and 9, can be named »in vitro fertilization priority«.

Question 15th (euthanasia) was not significantly related to any of the factors.

The comparison of factor scores obtained at the beginning of the academic year with those obtained at the end shows the following:

Factor 1 named »the professional – genetician's role in human reproduction« although not considered important at the beginning of the academic year, shifted slightly towards »in no way« at the end of the academic year (Figure 1). It goes to say that a professional should not interfere too much in human reproduction. Decreased variability in students' answers at the end of academic year indicates achievement of a greater similarity of their attitudes than at the beginning of the year (Figure 1).

Factor 2 »medical confidentiality« in cases of AIDS, sexual abuse or drug addiction also shifted towards »in no way« at the end of the year, which means that physicians were considered to have less obligations in such cases (Figure 1).

Factor 3 named »father's and/or multidisciplinary commission's role in making decisions on induced abortion« showed a greater variability with slight shift towards limitation of right (Figure 1).

Factor 4 or »decision on interruption of treatment « indicated a slight tendency towards rights of patient rather than of a professional (Figure 1).

Factor 5 named »screening tests and therapy« revealed no changes (Figure 1).

Factor 6 named »child's right to find out his/her origin« showed practically no changes (Figure 1).

Factor 7 named »parents right of decision-making« was also without changes (Figure 1).

Factor 8 named »in vitro fertilization priority« although somewhat more homogeneous at the end of the year, recorded

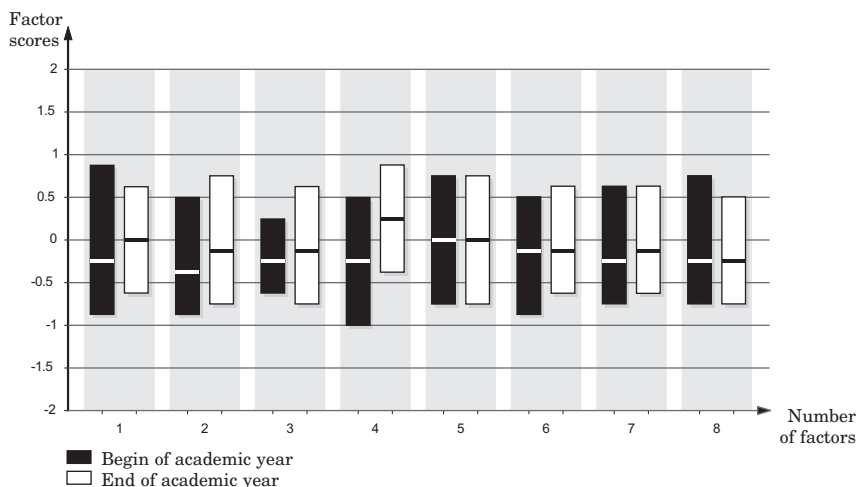


Fig. 1. Score distribution of factors 1–8: interquartile ranges.

no changes in average number of scores (Figure 1).

## Discussion

In this study we attempted to measure the effect of a compulsory curriculum on first-year medical students. The education of medical students starts with basic natural sciences (chemistry, physics, biology), anatomy and social sciences (social medicine, history of medicine and foreign languages). This means that they learn about ethics only indirectly, through biology, especially medical genetics, social medicine or through the history of medicine. Changes of ethical attitudes were noticed through examination by the same questionnaire at the beginning and at the end of the first academic year.

According to our results, the significant influence of a compulsory curriculum was founded especially on the first two factors: »the professional-geneticians role in human reproduction« and »medical confidentiality«. The changes in students' ethical attitudes towards greater rights of patients or the rights of parents to decide about their or child's future and reproduction seem to be primarily due to education in biology, particularly medical genetics. This may be the result of a lecturers' continuous usage of the term »inform« rather than »advise«. The term »inform« implies that we must provide complete information about the disorder, including the prognosis, potential treatment, taking care to present both sides of any controversial topic, and then let them make their own decision. A significant change of attitude towards less physicians' obligation to medical confidentiality in case of AIDS, sexual abuses and drug addiction may mean that a compulsory curriculum did not give them enough

arguments supporting the principle of confidentiality.

On the contrary, there is a rather neutral and unchanged attitude towards screening tests and therapy or towards in vitro fertilization priority. These topics are not discussed during the first year of medical education so students' knowledge about them remains the same as it was at the beginning of the academic year.

Both the right of the child to find out his/her origin, and parents' right to choose the sex of their child (factors 6 and 7) remained unchanged and without clearly defined attitude. Such results were rather surprising. We expected to get a clearly defined attitude, particularly as to the choice of the child's sex, already at the beginning of the academic year, with no significant change at the end. We presumed that the student population attending the first year of studies is still too young and immature and unable to accept such concepts, so we are going to repeat the research on the same sample in a few years time.

Our results clearly show that the current compulsory curriculum without formal ethical education has a limited influence on first-year medical students. That points to obvious necessity to implement the medical ethics in the course of medical education. Moreover, medical ethics programme should be introduced in each undergraduate year.

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## UTJECAJ OBVEZNOG NASTAVNOG PROGRAMA NA ETIČKE STAVOVE STUDENATA MEDICINE

### SAŽETAK

Ovim radom autori su htjeli utvrditi u kojoj mjeri obvezan nastavni program prve godine studija medicine utječe na promjenu etičkih stavova studenata. Istraživanje je provedeno na Medicinskom fakultetu Sveučilišta u Rijeci, Hrvatska. Anketiran je 171 student (68 muškaraca i 103 žena) na početku i 143 studenta (56 muškaraca i 87 žena) na kraju iste nastavne godine. Podaci su obrađeni metodom redukcije dimenzionalnosti te distribucijom faktorskih skorova izvedene pod kriterijem varimax. Rezultati su pokazali da je sadašnji obvezni nastavni program, bez dodatne etičke edukacije, imao ograničeni utjecaj na etičke stavove studenata, što ukazuje na nesumnjivu potrebu obaveznog pohađanja nastave iz medicinske etike tijekom cijelog studija medicine.