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## PATIENTS' BIOETHICAL IDEAS AS A REGULATORY FACTOR OF A BIOMEDICAL TECHNOLOGIES' APPLIANCE

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This article presents the results of a study of patients' bioethical ideas concerning the "opened" bioethical problems that are necessary to assess the formation of ethical regulators of professional medical activity. Comparative analysis revealed a wide variability, incomplete maturity and age differentiation of representations expressed by adult (18-59 years) and elderly (60-74 years) patients in relation to medical interventions in the life and death. A similar study on a model group of elderly patients revealed their negative attitudes to biomedical cloning technology (70,5% and 59,5%), transplantation of organs and tissues (56,8%) and 27,1%), euthanasia (52,3% and 34,8%), surrogacy (47,7%) and 24,7%) and in vitro fertilization (33,0% and 20,4%). Obtained results support the development of liberal trends in bioethical perceptions of the population living in the active period of life, and predict the future reduction of the impact of ethical regulators in the practice of a new biomedical technologies' appliance.

**Keywords:** ethical ideas, patients, elderly people, ethical regulation, biomedical technologies.

# БИОЭТИЧЕСКИЕ ПРЕДСТАВЛЕНИЯ ПАЦИЕНТОВ КАК ФАКТОР, РЕГУЛИРУЮЩИЙ ИСПОЛЬЗОВАНИЕ БИОМЕДИЦИНСКИХ ТЕХНОЛОГИЙ

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В статье изложены результаты исследования биоэтических представлений пациентов относительно «открытых» биоэтических проблем для оценки формирования этических регуляторов профессиональной деятельности врача. Проведенный компаративный анализ выявил широкую вариабельность, недостаточную сформированность и выраженную возрастную дифференциацию отношения пациентов взрослого (18-59 лет) и пожилого (60-74 года) возраста к медицинским вмешательствам в жизнь и смерть человека. Аналогичное исследование, проведенное на модельной группе пациентов пожилого возраста, выявило отрицательное отношение пожилого коораста, выявило

(70,5% технологиям клонирования против 59.5%). трансплантации органов и тканей (56,8% против 27,1%), эвтаназии (52,3% против 34,8%), суррогатного материнства (47,7%) 24,7%) против u экстракорпорального оплодотворения (33,0% против 20,4%). Полученные пезультаты подтверждают развитие либеральных взрослого тенденций в биоэтических представлениях населения, находящегося в наиболее активном периоде жизни, и позволяют прогнозировать в будушем снижение влияния этических регуляторов на практику использования новых биомедицинских технологий.

Ключевые слова: этические представления, пациенты, пожилой возраст, этическое регулирование, биомедицинские технологии.

**Background.** Development of medicine during XX - XXI century associated with the active use of biomedical technologies in the border areas of life and death changes the understanding that there is a person. In such conditions the formation of a conscious attitude to what is happening in the human society changes and their consequences must be "not only for researchers involved in the development of new technologies, but also to those who use these technologies, i.e. ordinary citizens" [9, c. 9].

New opportunities of medicine expanding the boundaries to manipulate life and death are in conflict with the established social moral values and ethical traditions. The situation is compounded by shortcoming in legal regulation of the practice of biomedical technologies [6, c. 3]. Nowadays moral responsibility of patients for the consent to adoption of a method of treatment is important. This is due to the fact that "the moral beliefs of people are still one of the main ways to protect society from the destructive consequences of the new biomedical technologies" [6, c. 4].

There are some studies, which demonstrate different problems of bioethical idea formation and development in social group [1-5, 7]. However, in spite of publications in the scientific literature and the progress made in solving this problem, it is important to continue studies within this field. Moreover, knowledge about the bioethical ideas and their differentiation due to age are limited. One more reason for current study is a new prefigurative type of culture in Russian society wherein previous sociocultural experience loses their value and younger generation with changed attitudes loses relationship with older one [8, c.1361].

So, the aim of the study was to assess attitude to biomedical technologies among adult and elderly patients.

Methods. A cross-sectional study in Arkhangelsk County was done. The main object of the study was an attitude to biomedical technologies among adults and elderly patients; subject - patients outpatient clinics. Group of patients was divided into two subgroups according to WHO recommendation: adult patients (18-59 years old) and elderly patients (60-74 years old). Patients who seek treatment in outpatient clinics during March – May 2015 were eligible for the study. Sample size was formed by simple random selection (N=513). Inclusion criteria were presented by age 18-74 years old and consent to participate, exclusion – age  $\geq$  75 years old and refusal to participate.

Data was collected by questionnaire based on the standardized questionnaire suggested by members of the Department of biomedical Ethics; Russian State Medical University named Pirogov [2, c. 82]. The questionnaire comprised 42 questions divided into three blocks. The first block was about moral and ethical characteristics of patients (18 questions), the second one – attitude to biomedical technologies: in vitro fertilization, surrogacy, cloning, organ transplantation, fetal cell therapy, abortion and euthanasia (19 questions), and the third one contained information about social-demographic characteristics of participants.

Person Chi-square test was used to analyse categorical variables. All analyses were performed using SPSS version 23 (SPSS Inc., Chicago, IL).

**Results**. Most participants were presented by male rather than female (62,0% *versus* 38,0%, respectively) and by adult patients rather than adult (82,9% *versus* 17,1%, respectively). In accordance with marital status participants were classified as married 51,3% (95%CI 46,9-55,6) and single 48,7% (95%CI 44,4-53,1). Most participants had offspring (69,6%; 95%CI 65,5-73,4), while 27,4% (95%CI 23,8-31,5) had one child, 31,4% (95%CI 27,5-35,5) – two children and 31,4% (95%CI 27,5-35,5) – three and more children. Every fourth participant had a high education.

Attitudes to methods of assisted reproduction among adults and elderly patients are presented in Table 1. Most participants had a positive attitude to in vitro fertilization (40,2%), while 15,2% demonstrated negative attitude. Almost each fourth participant did not have any attitude to in vitro fertilization.

## Table 1

Attitude to biomedical technologies of assisted reproduction among adult and elderly patients, % (95%CI)

Methods of		Age group				
assisted			1	Total		
reproduction	18-59	60-74	χ², p			
In vitro fertilization						
positive	42,4	29,5	$\chi^2 =$	40,2		
	(37,7-	(21,0-	2,497	(36,0-		
	47,1)	39,8)	<b>p</b> =	44,5)		
			0,026			
neutral	24,5	10,2	$\chi^2 =$	22,0		
	(20,6-	(5,5-	8,611	(18,7-		
	28,8)	18,3)	p =	25,8)		
	10.7	27.2	0,003	15.0		
negative	12,7	27,3	$\chi^2 =$	15,2		
	(9,9-	(19,1-	11,999	(12,4-		
	16,2)	37,4)	p = 0,001	18,6)		
unknown	20,4	33,0	$\chi^2 =$	22,6		
	(16,9-	(24,0-	$\frac{\chi}{6,493}$	(19,2-		
	24,6)	(24,0-	p =	26,4)		
	24,0)	-3,3)	0,011	20,4)		
	Su	irrogacy	0,011			
	50	inoguej				
positive	23,8	15,9	$\chi^2 =$	22,4		
-	(20,0-	(9,7-	2,587	(19,0-		
	28,0)	24,9)	p =	26,2)		
			0,108			
neutral	39,1	13,6	$\chi^2 =$	34,7		
	(34,5-	(8,0-	20,795	(30,7-		
	43,8)	22,3)	<b>p</b> <	38,9)		
			0,001			
negative	24,7	47,7	$\chi^2 =$	28,7		
	(20,8-	(37,6-	18,890	(24,9-		
	29,0)	58,0)	p <	32,7)		
			0,001			
unknown	13,2	22,7	$\chi^2 =$	14,2		
	(10,3-	(15,2-	5,270	(11,5-		
	16,7)	32,5)	<b>p</b> =	17,5)		
		1 i	0,022			
		Cloning	2	5,5 (3,8-		
positive	6,4 (4,4-	1,1 (0,2-,2)	$\chi^2 = 3,845$			
	(4,4- 9,1)	(0,2-,2)	p = 0.05	7,8)		
neutral	17,4	3,4	$\chi^2 =$	15,0		
ncutial	(14,1-	(1,2-	$\chi = 11,206$	(12,2-		
	21,3)	9,6)	p =	18,4)		
	_1,0)	2,0)	0,001	10,17		
negative	59,5	70,5	$\chi^2 =$	61,4		
	(54,8-	(60,2-	3,672	(57,1-		
	64,1)	78,9)	p	65,5)		
	, ,	- /	=0,055	7-7		
unknown	16,7	25,0	$\chi^2 =$	18,1		
	(13,5-	(17,1-	3,379	(15,0-		
	20,6)	34,9)	p =	21,7)		
			0,066			
Total	82,9	1	7,1	100,0		
	·	· · ·		1		

Footnote: Person chi-square test was used

We found that positive as well as neutral attitudes to in vitro fertilization were more common in adult patients compared to elderly patients (Table 1). Negative attitude to surrogacy and cloning was more common in elderly patients than in adult. Moreover, adult patients had more frequently neutral attitude to the methods of assisted reproduction compared to elderly participants.

Justifications attitude to in vitro fertilization of patients are presented in table 2.

### Table 2

Justifications attitude to in vitro fertilization among adult and elderly patients, % (95%CI)

Justification attitudes to in	Age group			Total			
vitro	18-59	60-74	χ², p				
fertilization			N y F				
Rea	Reasons for in vitro fertilization						
any cases of	54,4	31,8	$\chi^2 =$	50,5			
infertility	(49,6-	(23,0-	14,810	(46,2-			
5	59,0)	42,1)	p <	54,8)			
			0,001				
extreme cases	8,9	14,8	$\chi^2 =$	9,9 (7,6-			
infertility	(6,6-	(8,8-	2,769	12,8)			
-	12,0)	23,7)	p =				
			0,096				
ban on in vitro	10,8	21,6	$\chi^2 =$	12,7			
fertilization	(8,2-	(14,3-	7,639	(10,1-			
	14,1)	31,3)	<b>p</b> =	15,8)			
			0,006				
difficult to	25,9	31,8	$\chi^2 =$	26,9			
answer	(22,0-	(23,0-	1,306	(23,3-			
	30,3)	42,1)	<b>p</b> =	30,9)			
			0,253				
Status of c		rn via in vi	tro fertilizat				
the same as all	55,1	34,1	$\chi^2 =$	51,5			
	(50,3-	(25,0-	12,832	(46,9-			
	59,7)	44,5)	p <	55,6)			
			0,001				
less healthy	5,6	2,3	$\chi^2 =$	5,1 (3,5-			
	(3,8-	(0,6-	1,725	7,3)			
	8,3)	7,9)	p =				
			0,189				
born	11,1	28,4	$\chi^2 =$	14,0			
unnatural way	(8,4-	(20,0-	18,190	(11,3-			
	14,4)	38,6)	p <	17,3)			
			0,001				
difficult to	28,2	35,2	$\chi^2 =$	29,4			
answer	(24,2-	(26,1-	1,716	(25,7-			
	32,7)	45,6)	p =	33,5)			
	0 <b>4</b> -		0,190	107.7			
Total	82,9	1'	7,1	100,0			

Footnote: Person chi-square test was used

Every second patient has been agreed with need in vitro fertilization for childless family (Table 2). However, almost 13% considered that in vitro fertilization is not permissible under any circumstances. Moreover, there were patients who had difficulty in answer.

Elderly patients were less likely to allow in vitro fertilization for childless families compared to adult patients (31,8% versus 54,4% p < 0,001). They considered more frequently than adult patients that in vitro fertilization is unnatural way for pregnancy (21,6% versus 10,8% p =

0,006). Moreover, according to status of children born via in vitro fertilization, elderly patients less frequently chose such answer, as "children born via in vitro fertilization are the same as all" compared to adult patients.

Slightly more than half participants had a neutral or positive attitude to surrogacy and almost every third demonstrated negative one (Table 1). Negative attitude to surrogacy was more common in elderly patients than in adult (47,7% versus 24,7% p<0,001). Neutral attitude to surrogacy was more common in adult patient compared to elderly (39,1% versus 13,6% p<0,001).

About 42% of participants admitted surrogacy for childless families. Approximately 15% of patients restricted surrogacy for childless families only in extreme conditions. However, each fifth participants thought about the impossibility to use the method on the whole.

Only each third elderly patient allowed using surrogacy as a method of assisted reproduction compared to adult patient (29,6% versus 62,2% p <0,001).

Most of participants had a negative attitude to cloning (61,4%; 95% CI 57,1-65,5) and only 5,5% (95% CI 3,8-7,8) had a positive one (Table 1). But there were some participants who were not able to answer on this question (18,1% (95% CI 15,0-21,7)).

Adult patients had a more positive attitude to cloning compared to elderly patient (1,1% versus 6,4% p = 0,05) (Table 1). Fourth both adult and elderly patients could not substantiate their attitude to cloning.

Patient's attitudes to biomedical technologies of life extension are presented in Table 3. Only each third patient had either positive or negative attitude to organ transplantation. Almost 53% of participants could not choose an option related to fetal cell therapy.

Table 3.

Biomedical	Age group			
technologies		001		Total
of life	18-59	60-74	χ², p	
	10-57	00-74	λ, Ρ	
extension				
	Or	gan transpl	antation	
positive	34,8	9,1	$\chi^2 =$	30,4
	(30,4-	(4,7-	22,812	(26,6-
	39,5)	16,9)	p <	34,5)
			0,001	
neutral	24,5	13,6	$\chi^2 =$	22,6
	(20,6-	(7,9-	4,890	(19,2-
	28,8)	22,3)	<b>p</b> =	26,4)
			0,027	
negative	27,1	56,8	$\chi^2 =$	32,2
	(23,1-	(46,4-	29,592	(28,3-

Attitude to biomedical technologies of life
extension among adult and elderly patients, % (95%CI)

	-		1	
	31,5)	66,7)	<b>p</b> <	36,3)
			0,001	
unknown	13,6	20,5	$\chi^2 =$	14,8
	(10,7-	(13,4-	2,677	(12,0-
	17,2)	30,0)	p =	18,2)
			0,102	
	Fetal	cell therapy	у	
positive	17,4	11,4		16,4
	(14,1-	(6,3-		(13,4-
	21,3)	19,7)	$\chi^2 =$	19,8)
negative	29,6	38,6	3,638	31,2
	(25,5-	(29,1-	p =	(27,3-
	34,2)	49,1)	0,162	35,3)
unknown	53,0	50,0		52,4
	(48,2-	(39,8-		(48,1-
	57,6)	60,2)		56,7)
Total	82,9	17	7,1	100,0

Footnote: Person chi-square test was used

Both positive and neutral attitudes to organ transplantation were more common in adult patients rather than in elderly patients (34,8% versus 9,1% p<0,001 and 24,5% versus 13,6% p=0,027). Negative attitude to organ transplantation was more common in elderly patients compared to adult (56,8% versus 27,1% p<0,001).

Each fourth patient considered that organ transplantation was "an advance in medicine". Almost 30% of patients chose the answer as "organ transplantation can be used only in extreme cases". However, some participants (21,4%; 95%CI 18,1-25,2) defined organ transplantation as unnatural way.

Elderly patients were less likely to consider that "organ transplantation is an advance medicine" (6,8% versus 28,7% p<0,001) and were more likely to define it as unnatural way (41,0% versus 30,7% p<0,001), respectively, compared to adult patients.

Half of patients did not mention about their fetal cell therapy attitude (Table 3). Moreover, there were not statistical differences between types of attitude to fetal cell therapy and different group of patients.

Attitudes to abortion and euthanasia among adult and elderly patients are presented in Table 4. Each third patient had a negative attitude to abortion. Moreover, only 8,8% participants demonstrated a positive attitude to abortion. Interesting, elderly patients had the same distribution of attitude to abortion as adult patients.

Table 4.

Attitude to abortion and euthanasia among adult and elderly patients, % (95%CI)

Variable	Age group			Total
	18-59	60-74	χ², p	

Abortion					
positive	8,9	8,0	$\chi^2 =$	8,8 (6,6-	
	(6,6-	(3,9-	0,089	11,5)	
	12,0)	15,5)	p =		
			0,766		
neutral	51,3	45,5	$\chi^2 =$	50,3	
	(46,6-	(35,5-	0,994	(46,0-	
	56,0)	55,8)	p =	54,6)	
			0,319		
negative	32,9	34,1	$\chi^2 =$	33,1	
	(28,6-	(25,0-	0,043	(29,2-	
	37,5)	44,5)	p =	37,3)	
			0,835		
unknown	6,9	12,4	$\chi^2 =$	7,8 (5,8-	
	(4,8-	(7,1-	3,268	10,4)	
	9,6)	21,0)	p =		
			0,071		
		uthanasia			
positive	23,1	10,2	$\chi^2 =$	20,9	
	(19,3-	(5,5-	7,272	(17,6-	
	27,3)	18,3)	<b>p</b> =	24,6)	
			0,007		
neutral	20,0	13,6	$\chi^2 =$	18,9	
	(16,5-	(7,9-	1,925	(15,8-	
	24,1)	22,3)	p =	22,5)	
			0,165		
negative	34,8	52,3	$\chi^2 =$	37,8	
	(30,4-	(41,9-	9,439	(33,7-	
	39,5)	62,4)	<b>p</b> =	42,1)	
			0,002		
unknown	22,1	23,9	$\chi^2 =$	22,4	
	(18,-	(16,2-	0,128	(19,0-	
	26,3)	33,7)	p =	26,2)	
			0,721		
Total	82,9	17	,1	100,0	

Footnote: Person chi-square test was used

In spite of negative attitude to abortion on the whole, most participants (both adult and elderly patients) agreed with such reason for abortion as abnormal development of the fetus (60,5% versus 56,8% p=0,525). Those who had a positive attitude to abortion considered that abortion does not violate the rights of the child and is not a sin (90,1% adult patients versus 95,5% elderly patients p=0,111). However, elderly patients compared to adult patients were more common to consider that a doctor has to have a right to refuse to do an abortion (30,7% versus 22,4% p=0,048).

Most participants had a negative attitude to euthanasia (37,8%; 95%CI 33,7-42,1) (Table 4). At the same time each fifth patient could not make a decision related with euthanasia (22,4%; 95%CI 19,0-26,2). Interesting, elderly patients were more common to choose option with a negative attitude to euthanasia compared to adult patients (52,3% versus 34,8% p=0,002).

Detailed information about attitude to euthanasia among adult and elderly patients is presented in Table 5. Most participants noted that they would not endorse legislative resolution related to euthanasia (40,7%; 95%CI 36,6-45,0). However, every fourth patient considered that it is necessary to implement euthanasia.

Table 5

Different aspect of attitude to euthanasia among

adult and elderly patients, % (95%CI)

adunt and elderry patients, % (95%CI)						
Different aspect	Age group					
of attitude to		-		Total		
euthanasia	18-59	60-74	χ², p			
Proposal of legislative resolution related to euthanasia in						
		ussia				
will be	26,6	17,0		25,0		
supported	(22,6-	(10,6-		(21,4-		
11	31,0)	26,2)	$\chi^2 =$	28,9)		
will not be	39,1	48,9	4,383	40,7		
supported	(34,5-	(38,7-	p =	(36,6-		
~~FF	43,8)	59,1)	0,112	45,0)		
difficult to	34,3	34,1		34,3		
answer	(30,0-	(25,0-		(30,3-		
unswer	39,0)	44,5)		38,5)		
		for euthana	cia	50,5)		
patient's desire	35,5	21,6		33,1		
patient's desire	(31,1-	(14,3-	$\chi^2 = 6,393$	(29,2-		
	40,2)		-			
	40,2)	31,3)	p =	37,3)		
1	5.0	0.0	0,011	57(40		
doctor's	5,2	8,0	$\chi^2 =$	5,7 (4,0-		
decision	(3,4-	(3,9-	1,055	8,0)		
	7,7)	15,5)	p =			
			0,304			
euthanasia is	12,2	10,2	$\chi^2 =$	11,9		
impossible	(9,5-	(5,5-	0,281	(9,4-		
(without	15,7)	18,3)	p =	15,0)		
explanation)			0,596			
euthanasia is	23,8	37,5	χ <sup>2</sup> =	26,1		
like a murder	(20,0-	(28,1-	7,127	(22,5-		
	28,0)	47,9)	p =	30,1)		
			0,008			
difficult to	35,5	22,7	χ <sup>2</sup> =	23,2		
answer	(31,1-	(15,2-	5,377	(19,8-		
	40,2)	32,5)	p =	27,0)		
			0,020			
E	uthanasia i	s like a life	e vest			
agree	35,3	22,8		33,1		
	(30,1-	(15,2-		(29,2-		
	40,0)	32,5)	χ <sup>2</sup> =	37,3)		
do not agree	29,6	38,6	9,934	31,2		
-	(25,5-	(29,1-	p =	(27,3-		
	34,2)	49,1)	0,019	35,3)		
difficult to	35,1	38,6		35,7		
answer	(30,7-	(29,1-		(31,7-		
	39,7)	49,1)		39,9)		
Would you be able to perform euthanasia for your close						
friend?						
yes, I would	20,5	17,0		19,9		
,,	(16,9-	(10,6-		(16,7-		
	24,6)	26,2)	χ <sup>2</sup> =	23,6)		
no, I would not	37,6	56,8	13,702	40,9		
no, i would not	(33,2-	(46,4-	p =	(36,8-		
	42,3)	(40,4- 66,7)	р – 0,003	(50,8-		
difficult to	41,9	26,2	0,005	39,2		
		,		(35,1-		
answer	(37,3-	(18,1-		(35,1- 43,5)		
Total	46,6)	36,2)	7 1			
Total	82,9		7,1	100,0		

Footnote: Person chi-square test was used

Elderly patients more frequently chose the answer "Euthanasia is like a murder" and did not agree with the statement "Euthanasia is like a life vest" compared to adult participants (37,5% versus 23,8% p=0,008 and 38,6% versus 29,6 p=0,019) (Table 5). At the same time adult patients were more prone to choose the answer "euthanasia is a patient's desire" compared to elderly patients (35,5% versus 21,6% p=0,011). Moreover, adult patients more frequently would be able to perform euthanasia for their close friend compared to elderly patients (p=0,003).

## Conclusions.

1. Attitude to biomedical technologies among participants varies from positive (in vitro fertilization), neutral (abortion, surrogacy) till negative (cloning, euthanasia, organ transplantation, fetal cell therapy).

 Bioethical ideas concerning "opened" bioethical problems are not sufficiently formed. Each second participant has unknown attitude to fetal cell therapy; each fifth participant has unknown attitude to in vitro fertilization and euthanasia; and each seventh participant has unknown attitude to surrogacy and organ transplantation.

3. There are some similarities and differences related to attitude to biomedical technologies among adult (18-59 years old) and elderly (60-74 years old) patients. Similar views concern two of the seven biomedical technologies – fetal cell therapy and abortion.

 Negative attitudes to cloning, organ transplantation, euthanasia, surrogacy and in vitro fertilization are more common in elderly patients compared to adult participants.

Thus, our findings indicate a formation of liberal tendencies concerning bioethical ideas among adult patients (in their most who active period of life). It shows that ethical regulations influence the usage of new biomedical technologies among adult patients in a smaller extent compared to elderly. Shamsutdinova (2011) mentions "tendency of spirituality loss" as a main reason of declining importance of ethical regulation [8, c. 1361].

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