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CAUSES OF SHORTAGE OF LIVING/CADAVERIC ORGANS AND TISSUES DONATION: RESULTS OF A PUBLIC POLL IN KAZAKHSTAN

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The work studies causes of the shortage in a living/cadaveric donation in Kazakhstan according to public opinion poll. The research included 400 respondents aged 18 to 72 years (mean age 34.0±0.56 years). Persons with a secondary education made 16.0%, and persons with specialized secondary education - 31.75%, persons with higher education - 52.25%. In relation to religion the respondents were differentiated to the following groups: Muslims made 53.0%, Christians - 26.75%, and atheists - 12.5%.

Only 13.5% of respondents gave consent to living donation and 43.5% - to cadaveric donation. Percent of consonant persons to become cadaveric donor is the most among young people (47.6%) compared with persons in middle age (30.1%). The 26% of respondents would refuse to become cadaveric donor due to distrust to a positive outcome of donation (level of medical service, health development in the country).

The study indicates on existence of significant potential for cadaveric donation in Kazakhstan. The study concludes that the problem of cadaveric donation in Kazakhstan is not of fundamental importance and the problem relates to a lack of institutional and legal rules in the transplantation service.

Keywords: Living / cadaveric donation of organs and tissues, public poll study.

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Background

Evidence suggests that organ transplantation is a traditional type of health care in end-stage organ failure (WHO, 2011). While the technical aspects of transplantation do not cause great difficulties, legal and moral-psychological aspect to this moment remains a problematic issue (Ojo et al., 1994; Oniscu et al., 2005). The main problem of any transplant is to find a donation. The motto of transplantation sounds optimistic: "Departing from this life, do not take away internal organs. We need them here". However, it looks smooth on paper only.

In 2010, 98 countries were reported by the WHO as having organ transplantation services (WHO, 2011). In fact, all these countries constantly face the questions where and how the sufficiency of organs for transplantation is going to be obtained. Epidemic of end-stage kidney disease and the need for therapeutic transplantation are far outpacing organ availability, and the organ shortage has become a worldwide crisis.

The Declaration of Istanbul also states that jurisdictions, countries, and regions should strive to achieve self-sufficiency in organ donation by providing a sufficient number of organs for residents from their country or through regional cooperation (Steering Committee of the Istanbul Summit, 2008).

At present, in Kazakhstan is experiencing an acute shortage of donor organs and tissues. This is the main cause which may delay a development of transplantation. According to

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recent literature data transplantation for a patient may extend his lifetime and quality of life (Taylor et al., 2007; Helwick, 2009; Keller, 2011).

The deficit of donor organs and tissues in Kazakhstan may be related with mentality of a society, mistrustful attitude of the society to this type of surgery, various religious influences, etc. (Barsoum, 2008; Jafar, 2009).

Traditionally, the reason for not donating to Kazakhstan associated primarily with social and psychological causes. There is no clear understanding among both population and doctors in a provision of living/cadaveric organs and tissues donation. In the context, our purpose was to study causes of the shortage of a living/cadaveric donation in Kazakhstan based on a public opinion poll.

Participants and methods

Research design was an open, pilot, population-based, public opinion poll study. We recruited responders between June, 2011 and August, 2011 by questionnaire in capital of the country, Astana. There were included the 400 respondents aged 18 to 72 years (mean age 34.0±0.56 years), 243 female (60.75%). Persons with a secondary education were 64 (16.0%), with specialized secondary education - 127 (31.75%), with higher education - 209 (52.25%). In relation to religious criteria the respondents were differentiated to the following groups: Muslims made 212 (53.0%) people; Christians - 107 (26.75%), atheists were 50 (12.5%); 31 (7.75%) respondents were undecided.

Modern mathematical methods suggest that obtained results on a sample size of 400 are significant (>95%) with confidence interval from 7% to 13% (Bland, 2000; Armitage et al., 2002).

Respondents were adjusted by age into three groups according to WHO classification (1996) on the young age from 18 to 39 years, the mean age from 40 to 55 years, and middle and old age from 56 to 70 years and more.

A questionnaire design was conducted by using a simple complete random spontaneous sample. Such sample can adequately represent a general population (Guidelines of UNICEF / UNDP World Bank WHO for Research and Training in Tropical Diseases, 2008; Gordis, 2004). According to the population composition and structure in the country we consider that the chosen sample may correspond to a general population (Health of population in Kazakhstan and the activities of health care organizations, 2010, 2011; Khamzina et al., 2010).

The survey was conducted during a summer in Astana, when the most people all over the country go to the capital as traveling tourists. The survey was conducted through interviews assuming a prepared conversation plan and a direct contact between interviewer and respondent.

The two-sample Student's t-test and Odds ratios (OR) with confidence interval (CI) were used. The study data are presented in tables as mean ±m, where m is the standard error of mean. The correlation analysis (r) and multinomial logistic regression model OR with CI were used. P-value of <0.05 was set as significant. Statistical analysis was performed using Microsoft Excel-2008 and SPSS for Windows v.10.0 (Lapach et al., 2000).

Results

Study results of the respondents' attitude to a live donation of organs and tissues adjusted by age and sex are presented in Table 1. The data in Table 1 show that only 13.5% of the respondents would agree to become a living donor. Most respondents (45.75%) would refuse to become a living donor due to distrust to the current level of medical service and health development of transplantation in the country (OR 3.22; CI: 2.3-4.3). 9.0% explains their refusal to living donorship by lack of knowledge on legal regulations, and 11.75% - by religious considerations).

TABLE 1. THE RESPONDENTS' ATTITUDE TO A LIVING ORGANS AND TISSUES ADJUSTED BY AGE AND GENDER (in absolute data and percent)

Category of respondents	The respondents' answers:					Total
	Agree	Disagree due to:			Difficult to answer	
		Lack of knowledge about legal framework	Distrust to a positive outcome of donation (the level of medical service, health development)	Religious motivation		
Total:	54 (13.5)	36 (9.0)	183 (45.75)	47 (11.75)	80 (20.0)	400
Adjusted by age:						
18-39	43 (14.6)	23 (7.8)	140 (47.6)	29 (9.9)	59	294
40-55	8 (9.6)	9 (10.8)	39 (47.0)	13 (15.7)	14	83
56-72	2 (13.0)	2 (17.4)	2 (18.5)	3 (21.7)	4	13
Adjusted by sex:						
Male	17 (10.8)	20 (12.7)	68 (43.3)	24 (15.3)	28	157
Female	37 (15.2)	16 (6.6)	115 (47.3)	23 (9.5)	52	243

The highest percent of disagreements to a living donor due to ignorance of a legal framework are observed in persons in middle/old age (17.4%). This age group demonstrates the lowest percent of a disagreement to a living donor due to distrust to a positive outcome of donation (the level of medical service, health development) (18.5%). Table 1 also shows that increase in the number of disagreements (from 9.9% to 21.7%) associated with a religious motivation goes along the increase of the respondents' age.

TABLE 2. THE RESPONDENTS' ATTITUDE TO A LIVING DONATION OF ORGANS AND TISSUES ADJUSTED BY EDUCATION LEVEL AND RELIGIOUS MOTIVATIONS (in absolute data and percent)

Category of respondents	The respondents' answers:					Total
	Agree	Disagree due to:			Difficult to answer	
		Lack of knowledge about legal framework	Distrust to a positive outcome of donation (the level of medical service, health development)	Religious motivation		
Total:	54 (13.5)	36 (9.0)	183 (45.75)	47 (11.75)	80 (20.0)	400
Adjusted by education level:						
secondary	6 (9.4)	18 (28.1)	21 (32.8)	4 (6.3)	15 (23.4)	64
specialized secondary	22 (17.3)	13 (10.2)	59 (46.5)	19 (15.0)	14 (11.0)	127
higher	26 (12.4)	5 (2.4)	103 (49.3)	24 (11.5)	51 (24.4)	209
Adjusted by religious motivations:						
Muslims	17 (10.8)	20 (12.7)	68 (43.3)	24 (15.3)	28 (17.8)	212
Christians	37 (15.2)	16 (6.6)	115 (47.3)	23 (9.5)	52 (21.4)	107
Atheists	27 (12.8)	15 (7.0)	95 (45.0)	31 (14.5)	44 (20.7)	50
Others	17 (16.2)	14 (12.8)	54 (50.4)	6 (6.0)	16 (14.5)	31

The data from Table 1 observed by gender graduation indicate that the percent of female respondents agreeing to become a living donor (15.2%) is 1.5 times higher than the percent of male respondents (10.8%) (OR 1.4; CI: 0.8-2.6). Compared with women the refusing of man is concerned with the fact of ignorance of a legal framework (12.7% vs. 6.6% - OR 2.1; CI: 1.04-4.0) and with religious motivation (15.3% vs. 9.5% - OR 1.7; CI: 0.9-3.1). One fifth of the respondents failed to answer.

Table 2 presents the study results of the respondents' attitudes to a living donation of organs and tissues according to type of education and religious motivations.

According to Table 2 respondents with secondary specialized education (17.3%) have the highest percent of agreement to a living donor compared with persons with higher education (12.4%) (OR 1.47, CI: 0.8-2.7). Persons with secondary education (9.4%) have the lowest percent of the agreement compared with the persons with higher education (OR 0.73, CI: 0.31-1.9). However, these data are not reliable.

The percent of disagreements to a living donation of organs and tissues due to religious reasons is the lowest in those who have a secondary education (6.3%). An increase of education level lead to increase of percent of refusing to become a living donor to 15.0% in persons with secondary specialized education (OR 2.6; CI: 0.8-7.0) and to 11.5% in those who have higher education (OR 1.9; CI: 0.6-5.0). But these data are not reliable also.

On the questionnaire question "whether you agree to note in your identity card that in case of fatal accident you are ready to become a cadaveric donor?" respondents were positive in 43.5% and negative in 56.5% of responses (OR 0.6; CI: 0.4-0.8).

Table 3 presents the results of the questionnaire indicating respondents' attitudes to a cadaveric donation of organs and tissues adjusted by age and sex.

Table 3 shows that 26% of respondents would refuse to get a cadaveric donation due to distrust to a positive outcome of donation (the level of medical service, health development) compared with the other persons who disagree due to ignorance of a legal framework and religious motivations (OR 1.81; CI: 1.2-2.5).

TABLE 3. THE RESPONDENTS' ATTITUDE TO A CADAVERIC DONATION OF ORGANS AND TISSUES ADJUSTED BY AGE AND GENDER (in absolute data and percent)

Category of respondents	The respondents' answers:					Total
	Agree	Disagree due to:			Difficult to answer	
		Lack of knowledge about legal framework	Distrust to a positive outcome of donation (the level of medical service, health development)	Religious motivation		
Total:	174 (43.5)	12 (3.0)	104 (26.0)	53 (13.25)	57 (14.25)	400
Adjusted by age:						
18-39	140 (47.6)	6 (2.0)	74 (25.2)	34 (11.6)	40 (13.6)	294
40-55	25 (30.1)	6 (7.2)	25 (30.1)	16 (19.3)	11 (13.3)	83
56-72	9 (38.1)	1 (5.1)	5 (20.7)	3 (12.0)	6 (24.1)	23
Adjusted by sex:						
Male	70 (44.6)	12 (7.6)	37 (23.6)	26 (16.6)	12 (7.6)	157
Female	97 (39.8)	12 (5.0)	65 (26.6)	27 (11.1)	43 (17.5)	243

Analysis of data from Tables 1 and 3 shows that respondents who consent to a cadaveric donation (43.5%) were 3.2 times more (OR 4.9; CI: 3.4-6.9) than compared with respondents who consent to a living donation (13.5%).

Table 3 shows that the percent of consonant persons to become a cadaveric donor is the highest among young people (47.6%) compared with persons in middle age (30.1%) (OR 2.1; CI: 1.2-3.5). These data would again confirm the earlier evidence (see Table 1) that persons in middle age are busy in professional work, family care, etc. Persons in young age are more prone to be a donor of organs and tissues.

The data in Table 3 shows also that a percent of persons consonant to a cadaveric donation is higher in male (44.6%) respondents compared with female (39.8%) ones (OR 1.2; CI: 0.8-1.8). Data from Table 1 shows that a percent of persons consonant to a living donation is higher in female (15.2%) respondents compared with male ones (10.8%) (OR 0.68; CI: 0.37-1.25). But these data are not reliable.

Table 4 presents the study results in respondents' attitude to a cadaveric donation of organs and tissues adjusted by education level and religious motivations.

TABLE 4. THE RESPONDENTS' ATTITUDE TO A CADAVERIC DONATION OF ORGANS AND TISSUES ADJUSTED BY EDUCATION LEVEL AND RELIGIOUS MOTIVATIONS (in absolute data and percent)

Category of respondents	The respondents' answers:					Total
	Agree	Disagree			Difficult to answer	
		Lack of knowledge about legal framework	Distrust to a positive outcome of donation (the level of medical service, health development)	Religious motivation		
Total:	174 (43.5)	12 (3.0)	104 (26.0)	53 (13.25)	57 (14.25)	400
Adjusted by education level:						
secondary	27 (42.2)	6 (9.4)	18 (28.1)	10 (15.6)	3 (4.7)	64
specialized secondary	54 (42.5)	3 (2.4)	32 (25.2)	19 (15.0)	19 (15.0)	127
higher	93 (44.5)	3 (1.4)	54 (25.8)	24 (11.5)	35 (16.7)	209
Adjusted by religious motivations:						
Muslims	88 (41.3)	10 (4.5)	49 (23.1)	39 (18.6)	26 (12.4)	212
Christians	53 (49.6)	1 (0.9)	33 (30.8)	5 (4.3)	16 (14.5)	107
Atheists	5 (9.0)	2 (4.0)	37 (74.0)	4 (7.0)	3 (6.0)	50
Others	14 (45.1)	2 (5.2)	3 (9.7)	3 (9.7)	9 (30.3)	31

According to Table 4 the highest percent of respondents' disagreement to a cadaveric donation due to ignorance of a legal framework is among persons with secondary education (9.4%) compared with a higher education (1.4%) (OR =7.1; CI 1.7-24.0).

Interestingly, the lowest percent of respondents' consent to a cadaveric organ donation according to type of religious belief was in atheists (9%). They have the highest percent of disagreement to a cadaveric donation (74%) due to distrust to a positive outcome of donation and because of a level of transplantation service in the country.

Discussion

Only 13.5% of respondents would be willing to become a living donor and 45.75% of persons refuse to a living donation because of distrust to the current level of medical service and health development of transplantation in the country (OR 3.22; CI: 2.3-4.3) (due to lack of knowledge about correspondent legal regulations (9.0%), and due to religious considerations (11.75%)).

Consent of persons to cadaveric donation in mean age (40-55 years) is the lowest compared to persons in young age and persons in old age. The fact may be explained by the fact that a person in mean age is entirely occupied in professional activity, family maintenance, children growing up.

Increase of the education level (from secondary to higher education) leads to reliability decrease of the percent of disagreements to a living donor due to ignorance of a legal framework from 28.1% to 2.4%, respectively (OR 16; CI: 5.4-40.3). Conversely, the increase of the education level leads to increase of the percent of refusing to a living donor due to distrust to a positive outcome of donation (level of medical service, health development) from 32.8% to 49.3% (OR 1.99, CI: 1.1-3.5).

43.5% of respondents were positive and 56.5% were negative to willingness of becoming a cadaveric donor of organs and tissues (OR 0.6; CI: 0.4-0.8). The results are surprising since it is believed that in Kazakhstan a cadaveric donation is in a state of extremely shortage, which is usually associated with ethnic tradition.

According to the literature the cadaveric donation in Kazakhstan is a shortage (Usenov, 2011; Kazakhstan Pravda, 2011). This may be due to the fact that in Kazakhstan after a person death his/her relatives try to withdraw the dead body without autopsy due to religious motivations. It is clear this significantly limits a cadaveric donation of organs and tissues.

Our results imply that in Kazakhstan there is a huge potential of cadaveric donation since about half of respondents (43.5%) (Table 3) is willing to become a donor for cadaveric organs and tissues. This could mean that every other citizen of Kazakhstan is ready to grant his organs and tissues for cadaveric donation. If a person after his death does not "have time" to give a positive consent to a donation of organs and tissues, of course, his relatives trying to preserve the integrity of his internal organs according to ethnic tradition.

Conclusion

Thus, essential potential for cadaveric donation exists in Kazakhstan. In fact the problem of cadaveric donation in Kazakhstan is not of fundamental importance but relates to the lack of institutional and legal rules in the field of relationship between human and transplantation service.

In order to promote in the country effective system of organ and tissue transplantation there is a need to build up the coordination center that will deal with fixation of consent form of people for a cadaveric donation of organs and tissues. There is need to raise the legal literacy of citizens, and to conduct a targeted state program that promotes the humanistic principles of donation.

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