Original article

Every third Kazakhstani medical student regrets the choice of education: A cross-sectional survey in Almaty

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Abstract

Background: Many physicians regret about their choice of profession. However, no studies on this topic have been performed in Central Asia.

Objective: To assess the proportion of medical students who regret their choice of education and to study factors associated with this outcome in Kazakhstan.

Methods: This is a cross-sectional survey and 2388 medical students of two medical universities in Almaty in 2011-2012 comprised the sample. Multiple logistic regression was applied to study associations between the outcome and associated factors.

Results: Altogether, 33.0% of the responders reported that they regret the choice of profession. The university, faculty, year of study, financing of the studies, place of residence, type of education obtained before entering the university, the reason for choosing the medical profession, how the student prepared him/herself for admission to the university, and opinions about tests for selecting future students and about the medical profession all influenced whether a medical students regretted his or her choice of profession.

Conclusions: The results suggest that one third of medical students in Almaty, Kazakhstan, regret the choice of medical education. The factors associated with the outcome identified in this study may be used to optimize the recruitment of students in the future. [*Ethiop. J. Health Dev.* 2013;27(3):235-242]

Introduction

It has been consistently reported that a considerable proportion of medical professionals and medical students regret their career choice or are dissatisfied with their studies, but the level of satisfaction varies between countries. For example, the rate of satisfaction was 86.6% among American (1) and 86.3% among Australian (2) medical students while in developing countries this proportion was considerably lower (3-8) reaching the lowest level of 54% in Mozambique and Uganda (5-6). Medical education is demanding and is associated with high levels of stress having negative effects on health of the students (9-12). The level of satisfaction among medical students has been shown to be associated with the ways of coping (13), personality and motivations of students in making their career choice (14).

The reasons for entering medical schools vary between countries. While in the United Kingdom, the most common reported reasons were: "being good at science subjects", "wanting a good interesting career", "always having wanted to be a doctor", "influenced by friends and relatives", and "wanting to help or work with people" (15), in Ethiopia, the most common reason was "interested in the field of life saving" followed by "better income" and "social prestige" (8).

We failed to identify international studies on satisfaction of medical students with their career choice performed in the Central Asian republics of the former Soviet Union in spite of the profound reforms of both health care and

medical education in these countries after breakup of the USSR.

Kazakhstan is one of the former republics of the Soviet Union with a rapidly developing economy, although life expectancy in Kazakhstan is among the lowest in the European WHO Region: 63.6 years for men and 73.5 years for women in 2009 (16). The last decade was characterized by considerable investments in health research and practice (17-18), but it remains unknown whether these investments have increased the level of satisfaction by medical practitioners and medical students.

The aim of this paper is to assess the proportion of Kazakhstani medical students that regretted their career choice and to study the factors behind this disappointment using the data from the cross-sectional study performed in Almaty in 2011-2012 academic year. Special attention was given to the reasons for the choice of the profession prior to entering the university, how the students prepared themselves for the entrance examinations and their general opinion about the medical profession.

Methods

This cross-sectional survey was performed in Almaty (Alma-Ata until 1993) – the largest city and the former capital of Kazakhstan. In spite of the fact that the capital of Kazakhstan moved to Astana in 1997, Almaty remains an important center of medical education in the country with two medical universities providing education to

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more future medical doctors and dentists than any other city in the country. In total, there were 8,963 medical students in Almaty during the academic year 2011-2012 studying at the faculties of general medicine, pediatrics, dentistry, internal medicine and preventive medicine. Altogether, 7,633 of them studied at the Kazakh National Medical University (KNMU) while the remaining 1,330 studied at the Kazakhstani-Russian Medical University (KRMU). In addition, there were 509 and 395 interns at these universities, respectively. All students and interns were invited to participate in this anonymous questionnaire-based survey. The questionnaire included 51 items on various aspects linked to student's choice of medical career and various aspects of students' life. For the purpose of this study, we selected 18 questions relevant to the research question.

The main outcome variable was a dichotomous self-reported disappointment in the choice of profession after entering the medical university, asked as a direct question. In terms of the place of education, all students were divided between those who studied at the KNMU and at the KRMU. Five faculties from each university were represented in the study: general medicine, preventive medicine, dentistry, internal medicine and pediatrics. The latter two faculties were common during the time of the Soviet Union and were substituted during the reform of medical education by faculties of general medicine. Therefore, these three faculties were merged into one "general medicine" for further analysis. The students were categorized into 7 groups based on their year of education: from the 1st through the 6th year students and interns. With respect to covering the costs for their education, the students were divided into those who received a grant from the state and those who paid for their education themselves. Other socio-demographic factors included age used as two-year groups: 16-17 years, 18-19 years, 20-21 years, 22-23 years and 24 years and older; and marital status was dichotomized into either married or unmarried. With regard to residence prior to admission to the university, students were categorized as urban or rural, while by their current residence in Almaty they were divided into those living in the hostel, those who rented apartments and those having their own place to stay. We also asked whether the students entered the university directly after school or obtained medical education as nurses in colleges or were taking their medical education as the next higher education. In addition, we asked whether the students had any experience in working in health care prior to entering the university. Given that many students in Kazakhstan combine studies with work, we asked whether students worked during the same academic year and about the main source of their income. The latter variable had three categories: scholarship, parental support and own earnings (Table 1).

The reasons for students selecting their choice of a medical profession prior to entering the university, how they prepared themselves to the entrance examinations and their general opinion about medical profession were categorized as presented in Table 2.

Bivariate associations between the outcome variable and each independent variable were assessed using Person's chi-squared tests. Independent associations between the outcome variable and potential correlates were studied using multiple logistic regression. The most parsimonious model was selected using stepwise procedure with backward elimination. Only those variables that were associated with the outcome at 5% significance level remained in the model. Additionally, we excluded the age of the participants from the multivariate analysis because it was collinear with the year of studies. Adjusted odds ratios (OR) with 95% confidence intervals (CI) were calculated for all coefficients. All analyses were performed using SPSS version.16 (SPSS Inc., Chicago, IL).

Participation in the survey was voluntary and anonymous. The study was approved by the ethical committee of the Kazakh School of Public Health in 2011.

Results
Altogether, 2,131 students and 257 interns from both universities participated in the study (response rate 26.6%). Among them, 33.0% reported that they regretted the choice of their studies.

Significant associations in bivariate analysis were found for all socio-demographic characteristics except the faculty, experience in working in the health sector and current employment (Table 1). Moreover, associations between regretting the choice of studies reached the level of statistical significance for all questions about why the respondents chose the medical profession (Table 2).

The results of the stepwise multiple logistic regression are presented in Table 3. They suggest that the odds of regretting the choice of profession among the students from KNMU exceeded the corresponding odds among the students from KRMU by two thirds. The students of faculties of dentistry and preventive medicine had 83% and 42% greater odds regretting entering the medical university, respectively, although the findings did not reach the level of statistical significance for the latter despite greater point estimate. The students of the second and the third year had the lowest odds of regretting their choice. The students who paid for their education themselves were 81% less likely not to regret the choice of studies compared to the students who were financed by the state grants. The students from rural areas had twice as high odds of being disappointed by their choice than their urban counterparts. Similar results were obtained for those students who chose medical education as their second higher education compared to those who entered the medicine university after secondary school.

Table 1: **Bivariate associations between socio-demographic characteristics of the students and whether they regret or not entering the medical university (Almaty, Kazakhstan, 2012)**

Characteristic	N (%)	Proportion of those who regret the choice of studies	Proportion of those who do not regret the choice of studies	P*
Study setting				<0.001
KNMU	1526 (63.9)	37.8	63.2	
KRMU	862 (36.1)	24.6	75.4	
Faculty				0.393
General medicine	2022 (84.7)	33.3	66.4	
Preventive medicine	51 (2.1)	39.2	60.8	
Dentistry	315 (13.2)	30.5	69.5	
Year of education				<0.001
1st	455 (19.1)	30.5	69.5	
2nd	411 (17.2)	25.1	74.9	
3rd	350 (14.7)	25.1	74.9	
4th	301 (12.6)	33.9	66.1	
5th	312 (13.1)	40.1	59.9	
6th	284 (11.9)	40.5	59.5	
Internship	275 (11.5)	42.5	57.5	
The studies are financed by				<0.001
State grant	1699 (71.1)	38.4	61.6	
Self-financed	689 (28.9)	19.9	80.1	
Gender				0.020
Male	609 (25.5)	29.2	70.8	
Female	1779 (74.5)	34.3	66.7	
Age, years				<0.001
16-17	168 (7.0)	42.9	57.1	
18-19	738 (30.9)	22.9	77.1	
20-21	544 (22.8)	36.2	63.8	
22-23	543 (22.7)	35.7	64.3	
24+	395 (16.5)	39.7	60.3	
Marital status				0.013
Married	331 (13.9)	39.1	60.9	
Unmarried	2057 (86.1)	32.1	67.9	
Place of residence before entering the university				<0.001
Urban area	1289 (54.0)	25.3	74.7	
Rural area	1099 (46.0)	42.1	57.9	
Place of residence now				<0.001
Hostel	788 (33.0)	43.4	56.6	
Rented apartments	654 (27.4)	32.6	67.4	
Own place	946 (39.6)	24.7	75.3	
Entered the university after				<0.001
School	2108 (88.3)	34.2	65.8	
Medical college	224 (9.4)	19.2	81.8	
Another university	56 (2.3)	46.4	53.6	
Experience in working in health care				0.084
Yes	581 (24.3)	36.0	64.0	
No	1807 (75.7)	32.1	67.9	
Currently employed				0.348
Yes	423 (17.7)	35.0	65.0	
No	1965 (82.3)	32.6	67.4	
Main source of income				<0.001
Scholarship	1114 (46.6)	39.0	61.0	
Parental support	1142 (47.8)	28.0	72.0	
Own earnings	132 (5.5)	25.8	74.2	
Total	**2388 (100)**	**33.0**	**67.0**	

*P-values were calculated using Pearson's chi-squared tests

Table 2: **Bivariate associations between the students' motivation of medical profession and whether they regret or not entering the medical university (Almaty, Kazakhstan, 2012)**

Characteristic	N (%)	Proportion of those who regret the choice of studies	Proportion of those who do not regret the choice of studies	P*
Why did you choose medical profession?				<0.001
I have always wanted to be a doctor	1306 (54.7)	29.2	70.8	
My parents are doctors	175 (7.3)	42.9	57.1	
My friends entered this university	33 (1.4)	57.6	42.4	
It was easy to get admitted to this university	38 (1.6)	31.6	68.4	
My adult relatives advised me	289 (12.1)	47.1	52.9	
Easy to get employed as a doctor	157 (6.6)	29.3	70.7	
I do not know	172 (7.2)	36.3	63.7	
Other	218 (9.1)	25.7	74.3	
How did you prepare yourself to the university				<0.001
Studied only school curriculum	1208 (50.6)	38.5	61.5	
Read special medical literature	198 (8.3)	19.2	80.8	
Listened to medical news	184 (7.7)	21.7	78.3	
Took private lessons with a tutor	701 (29.4)	32.0	68.0	
Other	97 (4.1)	22.7	77.3	
Do you think that there must me some special courses for future medical students at schools?				0.048
Yes	1911 (80.0)	32.7	67.3	
No	217 (9.1)	40.0	60.0	
I do not know	260 (10.9)	30.1	69.9	
What is the best qualification test in your opinion for entering the medical university				<0.001
Universal national test	1072 (44.9)	37.6	62.4	
Exams	577 (24.2)	28.8	71.2	
Interview	288 (12.1)	21.9	78.1	
Test of suitability to medical profession	451 (18.9)	34.8	65.2	
What do you think about general perception of medical profession by the society				0.008
Prestigious	1335 (55.9)	31.2	68.8	
Well-paid	129 (5.4)	36.4	63.6	
With good career opportunities	330 (13.8)	38.2	61.8	
Easy to get employed as a doctor	401 (16.8)	29.9	70.1	
Not appreciated at all	193 (8.1)	40.9	59.1	
Total	**2388 (100)**	**33.0**	**67.0**	

*P-values were calculated using Pearson's chi-squared tests

The students, whose parents were doctors and those who were advised to choose the medical profession by their adult relatives as well as those who entered the medical university because their friends did so, were more likely to regret their choice than those who reported that they had always wanted to be doctors. The respondents who studied only the school curriculum had the greatest odds of regretting their choice. Those who considered the medical profession as well-paid or with good career opportunities had more than 50% greater odds of regretting their choice similar to those who considered that the medical profession as not appreciated at all compared to the respondents who considered the medical profession as being prestigious.

Table 3: **Results of stepwise logistic regression: odds ratios (OR) with lower and upper limits of the 95% confidence intervals for the coefficients (Almaty, Kazakhstan, 2012)**

Characteristic	OR	Lower limit	Upper limit	P
Study setting				<0.001
Kazakh National Medical University	1 (Ref)			
Kazakhstani-Russian Medical University	0.60	0.48	0.75	
Faculty				0.023
General medicine	1 (Ref)			
Preventive medicine	1.83	0.94	3.57	
Dentistry	1.42	1.05	1.94	
Year of education				<0.001
1st	1 (Ref)			
2nd	0.68	0.49	0.95	
3rd	0.49	0.34	0.70	
4th	0.85	0.60	1.20	
5th	1.14	0.81	1.61	
6th	1.18	0.83	1.69	
Internship	1.59	1.10	2.29	
The studies are financed by				<0.001
State grant	1 (Ref)			
Self-financed	0.55	0.43	0.71	
Place of residence before entering the university				<0.001
Urban area	1 (Ref)			
Rural area	2.07	1.70	2.52	
Entered medical university after				0.023
School	1 (Ref)			
Medical college	0.79	0.54	1.17	
Another university	2.05	1.14	3.68	
Why did you choose medical profession?				<0.001
I have always wanted to be a doctor	1 (Ref)			
My parents are doctors	2.35	1.65	3.34	
My friends entered this university	3.26	1.53	6.97	
It was easy to get admitted to this university	0.76	0.36	1.62	
My adult relatives advised me	1.94	1.46	2.58	
Easy to get employed as a doctor	1.21	0.82	1.80	
I do not know	1.46	1.01	2.13	
Other	1.16	0.81	1.65	
How did you prepare yourself to the university				<0.001
Studied only school curriculum	1 (Ref)			
Read special medical literature	0.40	0.27	0.60	
Listened to medical news	0.38	0.25	0.56	
Took private lessons with a tutor	0.75	0.61	0.93	
Other	0.46	0.26	0.79	
What is the best qualification test in your opinion for admitting students to the medical university?				<0.001
Universal national test	1 (Ref)			
Exams	0.66	0.51	0.84	
Interview	0.52	0.37	0.73	
Test of suitability to medical profession	0.93	0.72	1.20	
How would you describe the medical profession?				<0.001
Prestigious	1 (Ref)			
Well-paid	1.66	1.10	2.49	
With good career opportunities	1.52	1.14	2.01	
Easy to get employed as a doctor	0.92	0.71	1.21	
Not appreciated at all	1.63	1.15	2.31	

Discussion

This is, to the best of our knowledge, the first study on factors associated with students' regret of their choice of education in the Republic of Kazakhstan. Our findings are generally in line with the results of studies performed in other developing countries showing that a considerable proportion of students regret the choice to study medicine (1-7). This proportion is higher than those reported in the USA (1) and Australia (2), similar to what was observed in Taiwan (3), and smaller than that reported in Brazil (4), Mozambique (5) or Pakistan (19). However, it is difficult to compare the results of different studies due to considerable heterogeneity of both the definition of dissatisfaction or regret, which might be related to

general regret of the career part or dissatisfaction with the quality of studies, and the methods used to assess the dissatisfaction of the students. Moreover, the factors behind the studied outcome may vary between the settings, even if the prevalence of dissatisfaction is similar.

Interestingly, we did not find associations between the students' dissatisfaction and their socio-demographic characteristics, such as marital status, gender and factors associated with economic status, such as place of residence, employment and main source of income. This suggests that the factors behind the regret of the choice of studies are mostly related to the study program, the motivation of students, personality, coping with stress and their general preparedness for university studies, but not to socio-demographic factors as in other countries (8, 19, 20). Students from rural areas were more likely to regret their choice of studies, but this may be related to the lower quality of secondary education in rural areas. Selecting medical students from disadvantaged groups is a debated issue in the Western world with a revolving door effect – many students are selected, but there is a very high dropout rate (21), but this may have little relevance to Kazakhstan because of the opportunity to receive state grants for education as well as a scholarship on the basis of academic merits, irrespective of social or ethnic background. Previous academic performance has been reported to be a good, although imperfect predictor of performance in undergraduate medical training (22). In Almaty, those students, who received state grants, as a result of previous high academic achievements, were more likely to regret the choice of medical education than those who paid for their studies themselves. This discrepancy might be explained by the greater motivation of the students who paid themselves. Moreover, poor academic performance is not the only factor related to regret of the choice of the medical profession. In Ireland, for example, the state of the health care system was mentioned as the most common source of dissatisfaction among Irish junior doctors (7).

The students of KNMU were more likely to regret the choice of their studies than the students of KRMU independently of all studied variables. The factors behind this observation may be related to the quality of the teaching and teaching methods (4, 8) or academic workloads and should be further explored.

The students who were in their second and the third year of studies were the most satisfied in our study. This may be explained by the fact that the initial frustration related to high burden of information compared to studies at school has passed, but challenges related to future work as physicians have not appeared yet. Interns were more likely to regret their choice of profession, probably because of the frustration of becoming independent practitioners and being unsure that they have acquired all the necessary clinical skills for it (3).

Students who opted for medical education after another university-level education were more likely to regret their choice than other students. This might be related to a heavier burden of studies in medical schools compared to other disciplines (12) combined with the fact that physicians in Kazakhstan have lower wages than employees in less demanding professions.

Students who reported that had always wanted to be doctors were less likely to regret their choice as well as those who took some additional courses or prepared themselves in other ways for their medical studies. These findings are not surprising and suggest that the selection of medical students based on their previous academic achievements, general preparedness for medical studies and motivations for studying medicine may reduce the number of disappointed students. Interestingly, the use of other selection strategies rather than a single universal national test after secondary school was also suggested by more than a half of the respondents and they were less likely to regret their choice of studies. The selection of students is a controversial issue (21), although universities should ensure that the selected students are qualified to cope with the studies and have the best potential to work effectively as physicians (14). The use of structured interviews (23), medical college admission test (MCAT) (24), the graduate Australian medical school admission test (GAMSAT) (25) have been developed, although the evidence of their efficacy is scarce (21).

A relatively large sample size is one of the advantages of the study that allowed detection of even small association with the outcome. However, the results should be interpreted with caution taking into consideration the potential limitations of the study. Although the sample was relatively large, the response rate was only 26.6%. Although the distribution of the study participants by the year of education and gender is similar to the distribution of the students in the two universities, we do not have information about whether they are representative of other socio-demographic characteristics. Another limitation of the study is that the questionnaire was not validated. However, face validity of the questionnaire was acceptable and the students did not have problems filling out the forms. Given that respondents in population based studies often belong to more privileged social strata, the proportion of the students, who regretted the choice of medical education may be even greater than we observed.

The generalization of the findings to other universities in Kazakhstan should be also done with caution. Although the academic programs of medical education in Kazakhstani universities are nearly identical, teaching methods, quality of teaching and the socio-demographic background of students vary across the country. The universities located in Almaty are considered to provide the best standards of education in the country, thus the

level of dissatisfaction or regret among medical students may be even higher in other universities. Another limitation is that the study does not differentiate whether the students regretted the choice of their studies because of the poor quality of education, health problems due to high level of information or general dissatisfaction with the chosen profession. This complicates comparisons with studies from other settings. Nevertheless, our study can be considered as the first step in studying determinants of success of medical education in Kazakhstan.

Further studies, preferably with cohort design, should assess the associations between dissatisfaction of medical students with their choice of education and learning styles, personality traits, cognitive factors, and teaching methods at medical schools in Kazakhstan. Pilot studies of using adapted and validated versions of MCAT, GAMSAT and interviews may provide further evidence of the effectiveness of selection procedures.

Conclusions
The results suggest that a third of the medical students regret the choice of the medical profession. The factors associated with the outcome identified in this study may be used to optimize the recruitment of students.

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