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Socio-Demographics Factors and Stress Levels among Undergraduate Medical Students in Kazakhstan.

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ABSTRACT

Medical students are highly exposed to social, emotional and physical stress conditions that can affect the ability to learn and the health condition. High stress levels might be resulted from stress-associated factors (SAF). The aim of this study was to assess the relationship between socio-demographic factors (age, year of education, gender, location of graduated high school) and SAF (financial constraints, marital status, having children, accommodation) and stress levels among undergraduate medical students in Kazakhstan. Data of SAF were collected by self-administered questionnaire of 676 participants. Stress levels due to life events were evaluated by Social Readjustment Rating Scale (SRRS) and divided by three stress level groups: low (0 -149), medium (150-299) and high (300 and more). Mean of SRRS score was 276.1. The proportions of medium and high level group were more than 76 % (n=514). Results indicate that SAF factors such as gender ($p=0.002$), financial constraints ($p=0.016$), marital status ($p=0.017$) and accommodation ($p<0.001$) were highly correlated with the stress level. Socio-demographic factors might be a factor for high level of stress among undergraduate medical students in Kazakhstan. Medical students are highly exposed to high and medium stress levels.

Keywords: Stress, medical students, stress associated factors, Kazakhstan.

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INTRODUCTION

Students are exposed to different stress-inducing factors such as studying, adapting to curriculums and new courses, relationships with other students, finances, and facing different living situations [1].

It has been shown that medical students are exposed to much more stress compared to other students [2-5], leading to significant health decline and psychological health problems (17-33%) in medical students [2, 3, 6].

High stress levels might be resulted from social, emotional and physical conditions so –called stress inducing factors that can affect the ability to learn [6,7]. Earlier studies have emphasized the effect of the following socio - demographic factors on the occurrence of stress: gender [6,8-10], year of education [11-17], rural or urban background [18], financial constraints [9,19], marital status [9,20-22] and accommodation [23-25].

After obtaining the independence from the Soviet Union, Kazakhstan has introduced several educational reforms, thereby students have to adapt for new educational system which in turn results in stress levels elevation. Almaty is the largest megapolis in the country (ex-capital of Kazakhstan) as well as Kazakh National Medical University is the largest medical educational institution of Kazakhstan (10,106 students). University is associated with many challenges such as hectic city life style, need in accommodation, deadlines as well as medical learning is very challenging process itself, all these resulting in elevated stress levels; and all these consequently lead to attention deficits and lowering the quality of learning amongst the students [26-28].

In this research we aimed to identify the relationship between stress-inducing factors and stress levels, particularly, socio-demographic factors, among undergraduate medical students in Kazakhstan.

MATERIALS AND METHODS

This is a cross-sectional self-administered questionnaire survey which was conducted at Kazakh National Medical University (KazNMU), Almaty city, Kazakhstan from 5th till 15th November, 2012. The research protocol was approved by the Local Ethics Committee of the KazNMU with the number of №3 dated October 25th, 2012

Participants

Totally 676 students were randomly recruited into the sample from 3769 first-, third- and fifth-year students of KazNMU. We have chosen students of first, third and fifth years because it was initial, middle and final years of their education. We have tried to save equal proportion of females/males as well as number of students from these years of education. The inclusion criteria were absence of verified psychological and severe somatic diseases. The exclusion criteria were those with a medical condition (mental illness, student on medical or on academic leave). At the beginning of study, each participant signed written informed consent of participation in this study.

Mean age for all students was 19.3 (SD=1.9) years old, range 17–29 years. female/male students ratio in sample was 52.7%/47.3%. The proportion of students from first-, third- and fifth-year was 35.4%, 30.0% and 34.6% respectively. The baseline characteristics of sample are shown in table 1.

Data collecting procedure

Data were collected in two stages. First stage – identification by self-administered questionnaire of stress-associated factors (SAF): age, year of education, gender, location of graduated high school. Second stage – stress evaluation by Social Readjustment Rating Scale (SRRS). These questionnaire and scale students complete themselves. These stages were performed in one setting.

Unique code was assigned to each participant so the researcher who analyzed data was “blinded” to avoid biases. All data were collected into a database and analyzed.

Self-administered questionnaire

A structured self-administered questionnaire included SAF such as socio-demographic (age, year of education, gender, location of graduated high school) and factors contributing to stress (financial constraints, marital status, having children, accommodation). Variables "Location of graduated high school" was presented by "urban" for students who graduated high school in Almaty city and "rural" for students who graduated high school in other cities or villages and came to Almaty city to study in university. Variables "financial constraints" have two variants: "yes" and "no". Variables "Accommodation" were presented by living "with parents or relatives", "rental" and "residence hall". The "marital status" was presented as "single", "married" and "divorced". The "divorced" was excluded from analysis because nobody mentioned it. The variables "Have one or more children" had two variants "yes" or "no".

Stress evaluation

The Social Readjustment Rating Scale (SRRS) created by Holmes and Rahe was used to assess the stress level due to life events of all participants. Participants were asked about 43 life events that occurred in the past year and that are thought to evoke change in an individual's life. In accordance with SRRS scoring rules, each life event was assigned a predetermined life change units value ranging from 11 to 100, thought to correspond to "the amount and duration of change in one's accustomed pattern of life" [29]. Life change unit values were then summed for each participant to calculate a total SRRS score, with higher SRRS scores indicating greater stress. We have divided students into three group by level of stress: low (SRRS score from 0 till 149), medium (150-299) and high (300 and more) [30].

Statistical methods

Quantitative data (age, SRRS score) are represented as mean (M) and standard deviation (SD) or median (Me) and interquartile range (IQR). For explanation of differences between SRRS score (right skewed distribution) - Mann-Whitney U-test or Kruskal-Wallis H-test were used. Categorical data (SAF) were present by absolute frequency and percentage, for comparison Pearson's chi-square test was used. The level of significance was set at two-tailed with $p < 0.05$. All analyses were performed using the SPSS statistical package, version 20.0 for Windows (IBM Ireland Product Distribution Limited, Ireland).

RESULTS

Students who graduated urban high school ($p < 0.001$), without financial constraints ($p < 0.001$), single in marital status ($p < 0.001$) and lives with parents or relatives ($p < 0.001$) were majority in our study (table 1).

In our study mean of total SRRS score was 276.1 (right skewed distribution, Median=238.0, IQR=186). It corresponds to group of students with medium stress level which was the largest group - 39.8% ($n=269$). The proportion of low stress level group was lowest, only 24.0% ($n=162$). We have found that 36.2% ($n=245$) of undergraduate students have high stress level (table 1).

In distribution of SRRS score there were no differences in stress between students of first-, third- and fifth-year of education ($p=0.351$) (table 2). Similar situation in stress were among students graduated urban and rural schools ($p=0.617$).

On contrary, we have identified higher stress among males ($p=0.002$), in students with financial constraints ($p=0.016$), who were single ($p=0.017$) and lives in rent apartment ($p < 0.001$).

Table 1: Baseline characteristics of study sample.

	Baseline characteristics		
	N	%	p-value
Year of education			
First-year	239	35.4	0.185
Third-year	203	30.0	
Fifth-year	234	34.6	
Gender			
Female	356	52.7	0.166
Male	320	47.3	
Location of graduated high school			
Urban	551	81.5	<0.001
Rural	125	18.5	
Financial constraints			
No	442	65.4	<0.001
Yes	234	34.6	
Marital status			
Single	613	90.7	<0.001
Married	63	9.3	
Accommodation			
With parents or relatives	404	59.7	<0.001
Rent apartment	135	20.0	
Residence hall	137	20.3	
Stress level			
Low	162	24.0	<0.001
Medium	269	39.8	
High	245	36.2	

Table 2: Distribution of SRRS scores by studied SAF.

	SRRS score (n=676)			
	M	SD	p-value	p-value
Year of education				
First-year	271	154	0.351	0.665 (first vs. third)
Third-year	268	157		0.166 (third vs. fifth)
Fifth-year	288	165		0.308 (first vs. fifth)
Gender				
Female	261	158	0.002	
Male	293	157		
Location of graduated high school				
Urban	276	157	0.617	
Rural	278	165		
Financial constraints				
No	269	160	0.016	
Yes	289	155		
Marital status				
Single	282	163	0.017	
Married	219	92		
Accommodation				
With parents or relatives (1)	264	164	<0.001	<0.001 (1 vs. 2)
Rent apartment (2)	320	162		0.004 (2 vs. 3)
Residence hall (3)	267	129		0.064 (1 vs. 3)

DISCUSSION

The aim of this study was to determine proportion of high stress level among medical students and to identify the relationship between stress-associated factors and stress levels among them. Recent research papers have showed a strong association between stress and gender, financial constraints, marital status and

living accommodations; however, in our own data, we did not find association between stress levels, course study and urban or rural background, while more than a 1/3 of the students showed high levels of stress. The results showed that a small percentage of the subjects had low level of stress (24.0%), medium levels of stress (39.8%), and a large percentage of the students showed high stress levels (36.2%). These data agree with the paper from Saudi Arabia, showing the high stress levels that prevailed among interns during the educational process [31].

Several researches showing no significant difference of stress levels between the student's genders [8,9]. In another study by Moshin Shah, the female students had higher stress levels compared to male students because it is related to the fact that Pakistan favors conservatism [10]. Interestingly, our results indicated that male students had statistically significantly higher stress levels compared to female students. Probably, it could be explained as in Kazakhstan males play dominant position in the family, at work and in politics. Which might be seen from study done by Chen et al. (2012) also had found that the male students accounted for a large percentage of elevated level of stress and having less inclination towards using positive coping approaches [8]; which might be explained by the fact that China, being a patriarchal country, where man have more problems with money –earning and they are obliged to be the main bread-miller.

In Kazakhstan, conservatism does not play such an important role in the daily lives of people as it does in Pakistan. That is why we believe this reason does not play a significant role in the stress level elevations in Kazakhstani woman.

Financial problem was another factor that influenced the stress score among medical students. Johari A.B. et al. [9] had found that financial problems were the most influencing factors for the stress [19]. The current study showed that stress in students with financial hurdles was higher than in well-funded participants. Indeed, high levels of stress can have a detrimental effect in the near future, but it can be a stimulating factor in the long term.

Our data showed, that married students were significantly less stressed compared to single students, this comes in accordance with the study of Johari A.B. et al. [9,20]. The reason may be related to that the romantic relationships could alleviate the stress. A study done by Zaid, et al., showed that students who had a romantic relationship experienced less stress than those who did not have those [12,20]. Lloyd S et al. indicated that marriage is a protective factor against depression [21]. Marriage is a relationship built on love, understanding, and a support system that acts as a defense mechanism against physiological illnesses [22].

Students who rent apartments and student-tenant housing are stressed more than those who live with their parents. Many students cannot allow themselves to rent comfortable apartment with all necessary utilities due to financial constraints. A study done by Johnson E. et al. showed that living conditions in the apartments do not always meet the standards [23] in connection with lower cost payment that may cause high stress. Vivek B, Waghachavare, et al. indicated that students who live in tenant-housing experience more stress [24]. Students who live in tenant-housing showed violation of daily regime, violation of nutrition, and accommodating factors are not always pleasant which can induce stress [25].

In our study we also found that the 5th year students are suffered from the stress relatively more as compared to year 1 and year 3 students. The difference is not statistically significant but the same circumstances are shown in other work [11-14]. This might be due to the fact that year 5 students face high expectations to become highly qualified competent doctors and to acquire good academic results [15]. First year students are relatively higher sufferer from stress as compared to third year students because they are adapting to the new environment and workload as well as the pressure to form new relationships with fellow peers [2,16,17].

Third year is the middle course. The students in this course have already adapted to the new environment and formed relationships with peers. There is also no concern yet for the choosing of a specialty.

As in the study of Yeresyan I., Lohaus A. [18], our study showed that the students from rural areas had higher stress compared with their urban colleagues however not to a significant extent. Particularly, the students who live in the countryside experience more stress than their urban colleagues, probably, because the rural students are faced lower levels of life accommodation.

CONCLUSION

In this study we examined and quantify the amount of psychological stress among the medical students particularly. Our results showed that more than one third of the medical students are highly exposed to stress. Gender, financial constraints, marital status and accommodation were the most influencing factors in stress. Our results could be used as source of preventive measures in combating stress among the medical students.

REFERENCES

- [1] Katrina J Moffat, Alex McConnachie, Sue Ross, Jillian M Morrison. *Med Edu* 2004; 38: 482–491.
- [2] Liselotte N. Dyrbye, Matthew R. Thomas, Tait D. Shanafelt. *Mayo Clin Proc* 2005; 80(12): 1613–1622.
- [3] http://health.usf.edu/medicine/educationalaffairs/pace_files/MSOP%20learning%20objectives.pdf .
Accessibility verified: March 4, 2015.
- [4] Abdel Rahman AG, Al Hashim BN, Al Hiji NK, Al-AbbadZ. *J Prev Med Hyg* 2013; 54(4):195-199.
- [5] Petra Verdonk, Viktoria Röntzsch, Remko de Vries, Inge Houkes. *BMC Med Edu* 2014; 14: 96.
- [6] Sherina MS, Rampal L, Kaneson N. *Med J Malaysia* 2004; 59(2): 207-211.
- [7] Chandrashekhar T Sreeramareddy, Pathiyil R Shankar, VS Binu, Chiranjoy Mukhopadhyay, Biswabina Ray, Ritesh G Menezes. *BMC Med Edu* 2007; 7:26.
- [8] Chen H, Wong Y, Ran M, Gilson C. *J Socl Work* 2012; 9(3): 323-344.
- [9] Johari AB, Hassim IN. *J Community Health* 2009; 15: 106-115.
- [10] Mohsin Shah, Shahid Hasan, Samina Malik, Chandrashekhar T Sreeramareddy. *BMC Med Edu* 2010; 10:2.
- [11] Sreeramareddy CT, Shankar PR, Binu VS, Mukhopadhyay C, Ray B, Menezes RG. *BMC Med Edu* 2007; 7:26.
- [12] Zaid ZA, Chan SC, Ho JJ. *Singapore Med J* 2007; 48(10): 895–899.
- [13] Supe AN. *J Postgrad Med* 1998; 44:1-6.
- [14] Shaikh BT, Kahloon A, Kazmi M., Khalid H, Nawaz K, Khan N, Khan S. *Educ Health (Abingdon)* 2004; 17: 346-353.
- [15] Shaikh Sh, Shaikh AH, Magsi I. *Psychiatry J* 2010;16(4): 538.
- [16] Marjani A, Gharavi AM, Jahanshahi M, Vahidirad A, Alizadeh F. *Kathmandu University Medical Journal*. 2008; 6(23): 421-425.
- [17] Abdulghani HM, AlKanhil AA, Mahmoud ES, Ponnampereuma GG, Alfaris EA. *J Health Popul Nutr* 2011; 5:516-522.
- [18] Yeresyan I, Lohaus A. *Rural and Remote Health* 2014; 14: 2695.
- [19] Mostafa A, Abdel-Hady EG, Aly EH. *Medical Education Online* 2008; 13:12.
- [20] Abdus Salam, Rabeya Yousuf, Sheikh Muhammad Abu Bakar, Mainul Haque. *Int Med J* 2013; 20(6): 649 – 655.
- [21] Lloyd S, Streiner D, Shannon S. *J Emerg Med* 1994; 12(4): 559–565.
- [22] Nambi S. *Indian J Psychiatry* 2005; 47(1): 3–14.
- [23] Johnson E, Cole EC, Merrill R. *J Environ Health* 2009; 71(6):43-49.
- [24] Vivek B. Waghachavare, Girish B. Dhumale, Yugantara R. Kadam, Alka D. Gore. *Ultan Qaboos University Med J* 2013; 13(3): 429-436.
- [25] Popivanova Ts, Uzunova A, Mineva T. *Probl Khig* 1994; 19: 146-152.
- [26] Shapiro ShL, Shapiro DE, Schwartz GER. *Acad Med* 2000; 75(7): 748–759.
- [27] Smith A. *Stress and information processing*. In: Johnston M, Wallace L, et al (eds). *Stress and Medical Procedures*. Oxford Medical Publications. Oxford, England: Oxford University Press, 1990.
- [28] Askenasy J, Lewin I. *Sleep* 1996; 19: 47–51.
- [29] Holmes TH, Rahe RH. *J Psychosomatic Res* 1967; 11: 213–218
- [30] Elizabeth W. Holt, Paul Muntner, C. Joyce, Donald E. Morisky, Larry S. Webber, Marie Krousel-Wood. *Am J Epidemiol* 2012; 176 (7): 64-71.
- [31] Hamza Mohammad Abdulghani, Mohammad Irshad, Mohammed A Al Zunitan, Ali A Al Sulihem, Muhammed A Al Dehaim, Waleed A Al Esefir, Abdulaziz M Al Rabiah, Rashid N Kameshki, Nourah Abdullah Alrowais, Abdulaziz Sebiyani, Shafuil Haque. *J Neuropsychiatr Dis Treat* 2014; 10: 1879–1886.