ADAPTATION AND VALIDATION OF THE RUSSIAN VERSION OF THE OLDENBURG BURNOUT INVENTORY AMONG MEDICAL STUDENTS

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Abstract

Aim: This paper aims to describe the psychometric properties of the Russian version of the Oldenburg Burnout Inventory (R-OLBI-S) adapted for students in Kazakhstan.

Methods: A cross-sectional study was carried out at the NpJSC "Astana Medical University" between October and December 2019. In total, 696 medical students responded. The survey was anonymous and administered via a link to an electronic form. The study included R-OLBI-S and Copenhagen Burnout Inventory to measure burnout. Statistical analyses included frequency and confirmatory factor analysis, convergent and discriminant validity, and reliability analysis.

Results: The R-OLBI-S demonstrated good reliability and validity. Cronbach's alpha coefficient was 0.858, KMO = 0.886. R-CBI-S achieved good levels of goodness-of-fit indices (χ^2/df = 2.38, p < 0.001, CFI = 0.986, TLI = 0.979, SRMR = 0.023, RMSEA = 0.045). Convergent validity evidence showed AVE = 0.50 and CR = 0.80 for Disengagement subscale, AVE = 0.57, CR = 0.84 for Exhaustion subscale. The R-OLBI-S demonstrated good reliability and validity. The prevalence of burnout among students was 31%.

Conclusions: The adapted and validated Russian version of OLBI-S (R-OLBI-S) is a reliable tool for diagnosing burnout syndrome in students.

Key words: burnout syndrome, OLBI, medical students, Kazakhstan.

Резюме

АДАПТАЦИЯ И ВАЛИДИЗАЦИЯ РУССКОЯЗЫЧНОЙ ВЕРСИИ ОЛЬДЕНБУРГСКОГО ОПРОСНИКА ВЫГОРАНИЯ У СТУДЕНТОВ-МЕДИКОВ

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Цель: В статье описываются психометрические характеристики русскоязычной версии Ольденбургского опросника выгорания (R-OLBI-S).

Методы: Поперечное исследование было проведено в НАО «Медицинский университет Астана» в период с октября по декабрь 2019 года. Всего приняло участие 696 студентов-медиков. Опрос проводился анонимно, используя ссылку на электронную форму. Исследование включало следующие шкалы для измерения выгорания: R-OLBI-S и Копенгагенский опросник выгорания. Статистические методы: частотный и конфирматорный факторный анализ, анализ конвергентной и дискриминантной достоверности и анализ надежности.

Результаты: Коэффициент альфа Кронбаха составил 0,858, KMO = 0,886. R-CBI-S достиг хороших уровней показателей согласия (χ^2/df = 2,38, p<0,001, CFI = 0,986, TLI = 0,979, SRMR = 0,023, RMSEA = 0,045). Анализ конвергентной валидности показал, что AVE = 0,50 и CR = 0,80 для подшкалы «Отстраненность», AVE = 0,57, CR =

0,84 для подшкалы «Истощение». R-OLBI-S продемонстрировал хорошую надежность и валидность. Распространенность выгорания среди студентов составила 31%.

Заключение: Адаптированная и валидизированная русскоязычная версия OLBI-S (R-OLBI-S) является надежной методикой диагностики синдрома выгорания у студентов.

Ключевые слова: синдром выгорания, OLBI, студенты медики, Казахстан.

Түйіндеме

МЕДИЦИНА СТУДЕНТТЕРІ АРАСЫНДА ОЛДЕНБУРГ КҮЙІП ҚАЛУ САУАЛЫМАСЫН ОРЫС ТІЛІНЕ АДАПТАЦИЯЛАУ ЖӘНЕ ВАЛИДИЗАЦИЯЛАУ

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Мақсат: Осы мақалада Қазақстан студенттеріне бейімделген Олденбург күйіп қалу сауалнамасының (R-OLBI-S) орыс нұсқасының психометриялық қасиеттерін сипатталды.

Әдістер: 2019 жылдың қазан айынан бастап желтоқсан айына дейін Астана медициналық университетінде қималық зерттеу жүргізілді. Барлығы 696 медицина студенттері қатысты. Сауалнама жасырын болды және электрондық формаға сілтеме арқылы жүргізілді. Зерттеуде келесі күйіп қалуды өлшеу құралдары қолданды: R-OLBI-S және Копенгаген күйіп қалу сауалнамасы. Статистикалық әдістер жиілікті және конфирматорлы факторлық талдауды, конвергентті және дискриминантты жарамдылықты және сенімділік талдауларын қамтыды.

Нәтиже: Кронбахтың альфасы 0,858, KMO = 0,886 құрады. R-CBI-S келісімнің жақсы деңгейлеріне қол жеткізді (χ²/df = 2,38, p <0,001, CFI = 0,986, TLI = 0,979, SRMR = 0,023, RMSEA = 0,045). Конвергентті жарамдылықты талдау «Шеттелу» ішкі шкаласы үшін AVE = 0.50 және CR = 0.80, «Таусылу» кіші шкаласы үшін AVE = 0.57, CR = 0.84 көрсетті. R-OLBI-S сенімділігін мен жарамдылығын көрсетті. Студенттер арасында күйіп қалудың таралуы 31% құрады.

Қорытынды: OLBI-S (R-OLBI-S) адаптацияланған және валидизацияланған орыс нұсқасы студенттерде күйіп қалу синдромын диагностикалаудың сенімді құралы болып табылады.

Түйінді сөздер: күйіп қалу синдромы, OLBI, медицина студенттері, Қазақстан.

Introduction

Burnout is a syndrome of exhaustion, depersonalization, and decreased professional performance that occurs among employees working in social fields, like healthcare, education, and others [11]. At the same time, researchers began to investigate the phenomenon of emotional burnout in students [8,12]. Given that the structure of the activities that students are involved in, as well as the characteristics of the tasks that they have to perform, closely resemble those of many professions, for example, students must attend classes and achieve certain goals, such as passing exams [15], it is likely that students also feel exhausted and may develop a detachment from their studies [14].

Equivalent to employee burnout, student burnout has been defined as a three-dimensional syndrome that is characterized by a sense of exhaustion due to study requirements, a special attitude of detachment, and a decrease in personal effectiveness with academic requirements [15]. Given how long it takes for burnout symptoms to disappear [19], it is likely that academic burnout symptoms will still be present when students start their careers as first-time employees and young professionals. Thus, it is important to investigate the

phenomenon of professional burnout in students; since there is evidence that professional burnout follows a developmental process that may have already been initiated during students ' studies [6].

In most studies, academic burnout was measured using the Maslach Burnout Inventory-General Survey (MBI-GS) [16], adapted for students (MBI-SS) [15]. The main drawback of this approach is that it was automatically assumed that the concept of "burnout" for employees is equivalent to the concept of "burnout" for students. In other words, it is taken for granted that employees and students refer to the same experience when evaluating professional and academic burnout, respectively. However, there is still no convincing evidence for this assumption.

Besides, the psychometric indicators of MBI-GS are criticized, since this scale measures only affective exhaustion [9]. Given these circumstances, it was decided to use an alternative tool for detecting burnout syndrome in students – the Oldenburg Burnout Inventory (OLBI) [4], which was originally developed to overcome most of the limitations of MBI-GS [2,3]. To study academic burnout

Demerouti et al (2010) developed an OLBI version for students (OLBI-S) [5].

Since the phenomenon of burnout is little studied among students in Kazakhstan, the aim of the study is to adapt and validate the Russian version of OLBI-S for the diagnosis of burnout syndrome in students.

Materials and Methods
Study design

This was a cross-sectional study carried out in Astana Medical University (AMU) during the period October – December 2019.

Participants

Participants were invited via messengers and University Informational portal "Sirius" to self-complete an online survey created by the 1ka platform (www.1ka.si). Participation was anonymous and voluntary. 696 students from 1928 respondents completed the questionnaire (response rate 36%). The average age of the total sample was 19.98 years (SD = 2.50), with 75% being female. Table 1 presents the baseline socio-demographics of participants.

Table 1.

Socio-demographic characteristics of participants (N = 696).

Variance		n (%)	Non-burnout	Disengaged	Exhausted	Burnout	χ^2, p
Gender	Female	522 (75)	368 (70.5)	65 (12.5)	47 (9.0)	42 (8.0)	2.29,
	Male	174 (25)	112 (64.4)	37 (21.3)	6 (3.4)	19 (10.9)	p=0.130
Academic year	1 year	206 (29.6)	171 (83.1)	13 (6.3)	11 (5.3)	11 (5.3)	
	2 year	129 (18.5)	75 (58.1)	17 (13.2)	20 (15.5)	17 (13.2)	
	3 year	102 (14.7)	62 (60.8)	18 (17.6)	12 (11.8)	10 (9.8)	40.4,
	4 year	52 (7.5)	37 (71.2)	10 (19.2)	2 (3.8)	3 (5.8)	p<0.001
	5 year	65 (9.3)	52 (80.0)	10 (15.4)	0	3 (4.6)	
	6 year	142 (20.4)	83 (58.5)	34 (23.9)	8 (5.6)	17 (12.0)	
Total		696	480 (69.0)	102 (14.6)	53 (7.6)	61 (8.8)	

Measures

The socio-demographic characteristics of the participants were assessed through a custom-built questionnaire. To assess burnout the OLBI-S, through the

development of a Russian-version adapted for Kazakhstan (R-OLBI-S; Table 2), and the Copenhagen Burnout Inventory for college students (CBI-S).

Table 2.

The OLBI-S original and Russian version (R-OLBI-S)

Item	Original OLBI-S				Russian version of OLBI (R-OLBI-S)			
	Strongly agree	Agree	Disagree	Strongly disagree	Полностью согласен	Согласен	Не согласен	Полностью не согласен
	1	2	3	4	1	2	3	4
	Disengagement				Отстраненность			
1	I always find new and interesting aspects in my studies				*Я всегда нахожу в учебе новые интересные моменты.			
3R	It happens more and more often that I talk about my studies in a negative way				Все чаще и чаще я говорю о своей учебе в негативном ключе			
6R	Lately, I tend to think less about my academic tasks and do them almost mechanically				В последнее время я все меньше думаю о своих академических задачах и делаю их почти механически			
7	I find my studies to be a positive challenge				* Я считаю свою учебу позитивным вызовом			
9R	Over time, one can become disconnected from this type of study				Со временем можно отказаться от такого типа обучения			
11R	Sometimes I feel sickened by my studies				Иногда я испытываю отвращения от учебы			
13	This is the only field of study that I can imagine myself doing				*Это единственная сфера, в которой я себя представляю			
15	I feel more and more engaged in my studies				*Я все больше и больше вовлекаюсь в учебу			
	Exhaustion				Истощенность			
2R	There are days when I feel tired before I arrive in class or start studying				Бывают дни, когда я чувствую усталость, прежде чем я прихожу на занятия или начинаю учиться			

Table 2 (continued).

Item	Original OLBI-S				Russian version of OLBI (R-OLBI-S)			
	Strongly agree	Agree	Disagree	Strongly disagree	Полностью согласен	Согласен	Не согласен	Полностью не согласен
	1	2	3	4	1	2	3	4
	Exhaustion				Истощенность			
4R	After a class or after studying, I tend to need more time than in the past in order to relax and feel better				После занятий или после учебы мне требуется больше времени, чем в прошлом, чтобы расслабиться и почувствовать себя лучше			
5	I can tolerate the pressure of my studies very well				*Я хорошо переношу давление в своей учебе			
8R	While studying, I often feel emotionally drained				Во время учебы я часто чувствую эмоциональное истощение			
10	After a class or after studying, I have enough energy for my leisure activities				*После учебы у меня достаточно энергии для занятия досугом			
12R	After a class or after studying, I usually feel worn out and weary				После учебы я обычно чувствую себя измученным(ой) и усталым(ой)			
14	I can usually manage my study-related workload well				*Обычно я могу хорошо справляться с работой, связанной с учебой			
16	When I study, I usually feel energized				*Когда я учусь, я обычно чувствую себя энергичным(ой)			
R, reversed; *Removed items for the proposed Russian version								

The OLBI-S includes 16 items defined in 2 subscales: Exhaustion and Disengagement. Each subscale includes 4 positively and 4 negatively worded items that are scored on a 4-point Likert scale from 1 "strongly agree" to 4 "strongly disagree". The average was calculated for each subscale, which was divided into quartiles and grouped into "low", "average", and "high" scores. Burnout categories were grouped according to Peterson et al. (2008) [13]. The CBI-S consists of 25 items that represent four dimensions: Personal Burnout (PB) – 6 items, Studies-related Burnout (SRB), Colleague-related Burnout (CRB), and Teacher-related Burnout (TRB).

Data analysis

Items' distributions were evaluated by the frequency analysis with skewness and kurtosis calculation. Construct validity was established by the confirmatory factor analysis (CFA) technique.

Bartlett's test of sphericity, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy were evaluated.

The CFA is used to assess the overall goodness of fit: χ^2/df, the Root Mean Square of Error Approximation RMSEA (< 0.08); the Comparative Fit Index CFI (> 0.9) and Tucker-Lewis Index TLI (> 0.9).

The convergent validity evidence was analyzed using the average variance extracted (AVE) and composite reliability (CR), which was estimated.

The constructs' convergent validity evidence was assumed for a value of AVE ≥ 0.5, and CR > 0.70.

The factors' discriminant validity was assessed by comparing the AVE by each factor with the squared Pearson correlation between factors ($AVE_{x/y} \geq r^2_{xy}$).

Reliability analysis was estimated using Cronbach's alpha (α).

Statistical analysis

Data analysis was performed by Microsoft Excel 2007, SPSS version 20.0, and Jamovi version 1.2.17. A statistically significant difference was accepted at a p-value of less than 5%. Frequencies and percentages were calculated for the categorical variables. A chi-squared test was used to assess the differences between these variables. Continuous numerical data were summarized as Mean (M) and Standard Deviation (SD).

Ethics statement

The study was approved by the Local Ethics Committee of the NpJSC "Astana medical university" (extract from protocol No. 3, held on September 20, 2018).

Results

Table 3 gives descriptive statistics for items in R-OLBI-S. None of the items showed skewness and kurtosis absolute values indicative of severe violations of normality preventing further use in the factorial analysis.

Two-factor CFA of the R-OLBI-S indicated of poor fit (χ^2/df = 12.4, CFI = 0.685, TLI = 0.632, RMSEA = 0.128). Positively worded items of both Exhaustion and Disengagement subscales (items #1, 5, 7, 10, 13, 14, 15, and 16) shoed a low loading, and thus, this items was deleted.

The reduced model of 8 items R-OLBI-S showed better goodness-of-fit indices of two-factor structure (Figure 1; χ^2/df = 2.38, p < 0.001, CFI = 0.986, TLI = 0.979, SRMR = 0.023, RMSEA = 0.045, RMSEA 95% CI 0.0279 – 0.0614) compare to one-factor structure (χ^2/df = 8.20, p < 0.001, CFI = 0.923, TLI = 0.892, SRMR = 0.047, RMSEA = 0.102).

The Barlett's sphericity test result was significant (p < 0.001), and the KMO measure of sampling adequacy exceeded 0.886.

Table 3.

R-OLBI-S items: descriptive statistics.

| R-OLBI-S items	M	SD	SEM	Min	Max	Mode	CV	Sk	Ku
1*	2.26	0.83	0.03	1	4	2	0.37	0.54	-0.11
3R	2.30	0.80	0.03	1	4	2	0.35	0.24	-0.36
6R	2.45	0.77	0.03	1	4	3	0.31	-0.08	-0.41
7*	2.10	0.85	0.03	1	4	2	0.40	0.63	-0.03
9R	2.44	0.86	0.03	1	4	2	0.35	0.00	-0.67
11R	2.53	0.90	0.03	1	4	3	0.35	-0.10	-0.74
13*	2.42	0.96	0.03	1	4	3	0.40	-0.04	-0.98
15*	2.36	0.77	0.03	1	4	2	0.33	0.28	-0.25
2R	2.90	0.78	0.03	1	4	3	0.27	-0.67	0.42
4R	2.86	0.81	0.03	1	4	3	0.28	-0.35	-0.34
5*	2.49	0.75	0.03	1	4	2	0.30	0.26	-0.32
8R	2.60	0.80	0.03	1	4	3	0.31	-0.13	-0.44
10*	2.81	0.75	0.03	1	4	3	0.27	-0.28	-0.16
12R	2.83	0.78	0.03	1	4	3	0.28	-0.41	-0.07
14*	2.23	0.71	0.03	1	4	2	0.32	0.56	0.46
16*	2.58	0.76	0.03	1	4	3	0.29	0.03	-0.38
R, reversed; *Removed items for the proposed Russian version									
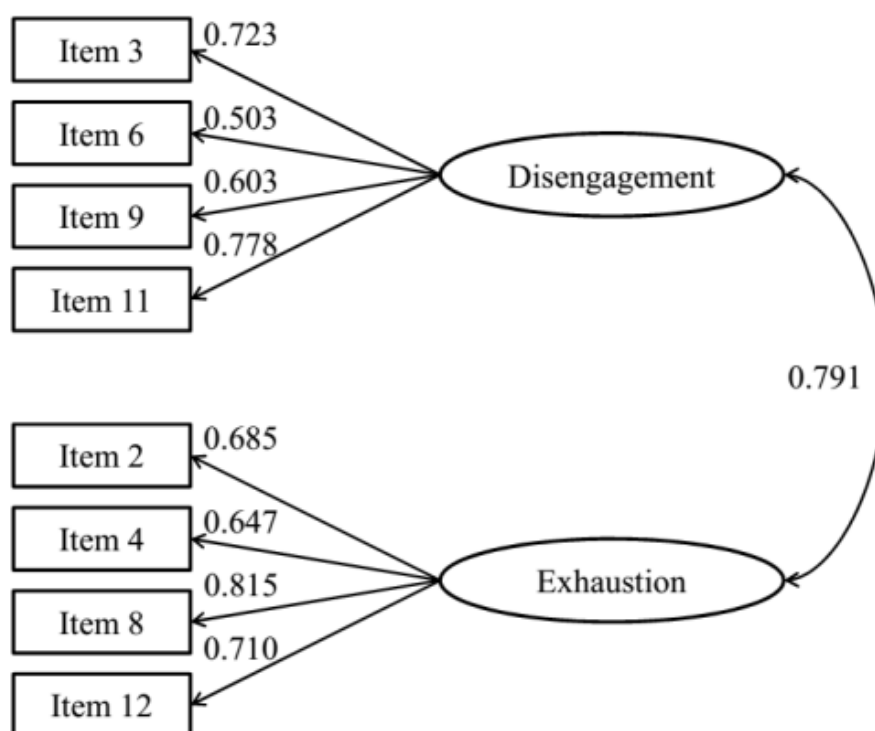
Figure 1. R-OLBI-S two-factor reduced version (8-item) structure fit.
$\chi^2/df = 2.38$, $p < 0.001$, CFI = 0.986, TLI = 0.979, SRMR = 0.023, RMSEA = 0.045.

Calculated AVE and CR suggested acceptable convergent validity evidence for the R-OLBI-SS (8 items), AVE = 0.50 and CR = 0.80 for Disengagement subscale, AVE = 0.57, CR = 0.84 for Exhaustion subscale. The discriminant validity evidence between the two R-OLBI-S factors suggested that the two factors are strongly related to each other since $AVE_{disengagement} = 0.50$ and $AVE_{exhaustion} = 0.57$ were smaller than $r^2 = 0.60$.

Reliability for R-OLBI-SS, as estimated by Cronbach's α, was greater than 0.70, Cronbach's α for Disengagement subscale was 0.762, for Exhaustion subscale – 0.798, for total scale – 0.858.

The measurement model showed high and moderate correlations between R-OLBI-S's Disengagement and Exhaustion and CBI-S's Personal, Studies-related, and Teachers-related burnout (Table 4). All correlations were significant at a level $p < 0.01$.

Table 4.

Squared Pearson Correlations (r^2) between factors of R-OLBI-S and CBI-S.

Inventory	Factors	r^2				
		PB	SRB	CRB	TRB	Dis
CBI-S	Personal burnout (PB)					
	Studies-related burnout (SRB)	0.805				
	Colleagues-related burnout (CRB)	0.250	0.304			
	Teachers-related burnout (TRB)	0.522	0.646	0.378		
R-OLBI-S	Disengagement (Dis)	0.543	0.610	0.234	0.527	
	Exhaustion (Ex)	0.665	0.675	0.244	0.461	0.604

The data collection was divided into percentiles of 25, 50, and 75. The returned thresholds for both Disengagement and Exhaustion subscales and burnout categories are presented in Table 5. The prevalence of burnout among students was 31%, results depending on gender and the year of the study presented in Table 1. There was no difference in the burnout prevalence between females and males.

Table 5.

R-OLBI-S Score Severity and Burnout Groups.

	Disengagement Scores	Exhaustion Scores
High (top quartile)	> 2,75	> 3.25
Average	2–2.75	2.5–3.25
Low (bottom quartile)	< 2	< 2.5
Burnout Group	High	High
Exhausted Group	Low or Average	High
Disengaged Group	High	Low or Average
Non-Burnout Group	Low or Average	Low or Average

Discussion

In the presented study we adapted the student version of the Oldenburg Burnout Inventory (OLBI) to the Russian language and analyzed its internal structure in a sample of medical students of AMU (Kazakhstan).

The study provides that psychometric properties of the two-factor structured R-OLBI-S have convergent validity evidence and good goodness-of-fit indices. CFA showed low factorial weight for positively worded items (items #1, 5, 7, 10, 13, 14, 15, and 16), and these items were deleted. Problems with items 5, 13, 15 also have being reported [10], for items 14 and 16 [17], 5, 17, and 13 [7]. Sedlar et al. (2015) reported that negative items were more reliable than positive items [18], for this reason, we decided to use a reduced negative two-factor model with four items from each of the exhaustion and disengagement subscales. Correlation between the two constructs of the R-OLBI-S (i.e., less than 0.85) suggests that two factors of the scale are measuring different attributes of burnout, which is also proved by discriminant validity assessment. The high correlation between the subscales of the R-OLBI-S and the CBI-S indicates the specificity of the instrument for determining burnout syndrome. The internal consistencies of the two subscales of R-OLBI-S were acceptable, with Cronbach's α 0.762 and 0.798.

According to Sedlar et al. (2015), OLBI should be validated in the local setting first before it is used for research purposes [18]. Based on our validation results, the proposed final 8-item R-OLBI-S is adequate for future burnout research in the population of medical students in Kazakhstan.

According to Peterson et al. criteria for burnout, the prevalence of burnout group was 8.8%, 14.6% of students were disengaged and 7.6% - exhausted. In total, the prevalence of burnout among medical students was 31%. Previous research used CBI-S, concluded that the prevalence of burnout was 28%, which was decreased after transmission to online learning format during the COVID-19 pandemic [1].

Conclusion

The adapted and validated Russian version of OLBI-S (R-OLBI-S) is a reliable tool for diagnosing burnout syndrome in students. This version can be used to assess the psychological status of College and University students of various profiles.

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