THE RELATIONSHIP BETWEEN THE INTELLIGENCE LEVEL AND STRESS SITUATIONS OF ALLIED HEALTH WORKERS WORKING IN THE EMERGENCY DEPARTMENT AND AFFECTING FACTORS

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Abstract

Aim: To examine the relationship between stress factors and cultural intelligence in non-doctor health workers.

Materials and Methods: Our aim was to analyze the correlation between Culturel intelligence and anxiety. A 41-question questionnaire was applied, including the demographic data of the participants, their professional knowledge, the Cultural Intelligence Scale validated in Turkish and the Beck Stress Scale validated in Turkish.

Results: 58 non-physician people working in the emergency department were included in the study. The relationship between stress criteria (PSS) and Cultural Intelligence criteria (CQ) was compared by linear regression analysis. No correlation was found with gender, occupation, education and emergency service education. In the correlation analysis between CQ and age, working time and working time in the emergency room, a positive correlation was found between working time in the emergency room and CQ (r=0.28, p=0.028).

Conclusion: Non-physician healthcare professionals to be aware of the concepts of cultural intelligence and cultural sensitivity and to know the effect of this on stress.

Keywords: Cultural Intelligence criteria, Perceived stress, Non-physician.

Резюме

ВЗАИМОСВЯЗЬ УРОВНЯ ИНТЕЛЛЕКТА, СТРЕССОВЫХ СИТУАЦИЙ И ВЛИЯЮЩИХ НА НИХ ФАКТОРОВ У МЕДИЦИНСКИХ РАБОТНИКОВ, РАБОТАЮЩИХ В ОТДЕЛЕНИИ НЕОТЛОЖНОЙ ПОМОЩИ

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Цель: изучить взаимосвязь между факторами стресса и культурным интеллектом у работников здравоохранения, не являющихся врачами.

Материалы и методы: Нашей целью было проанализировать корреляцию между культурным интеллектом и тревогой. Была применена анкета из 41 вопроса, включающая демографические данные участников, их профессиональные знания, шкалу культурного интеллекта, утвержденную на турецком языке, и шкалу стресса Бека, утвержденную на турецком языке.

Результаты: в исследование были включены 58 человек, не являющихся врачами, работающих в отделении неотложной помощи. Взаимосвязь между критериями стресса (PSS) и критериями культурного интеллекта (CQ) сравнивалась с помощью линейного регрессионного анализа. Никакой корреляции с полом, профессией, образованием и образованием службы экстренной помощи обнаружено не было. При корреляционном анализе между CQ и возрастом, рабочим временем и временем работы в отделении неотложной помощи выявлена положительная корреляция между временем работы в отделении неотложной помощи и CQ (r=0,28, p=0,028).

Выводы: Медицинские работники, не являющиеся врачами, должны быть осведомлены о концепциях культурного интеллекта и культурной чувствительности, а также знать, как это влияет на стресс.

Ключевые слова: критерии культурного интеллекта, воспринимаемый стресс, не врач.

Түйіндеме
ШҰҒЫЛ КӨМЕК БӨЛІМІНДЕ ЖҰМЫС ІСТЕЙТІН МЕДИЦИНА ҚЫЗМЕТКЕРЛЕРІНДЕГІ ИНТЕЛЛЕКТ ДЕҢГЕЙІНІҢ, СТРЕСС ЖАҒДАЙЛАРЫНЫҢ ЖӘНЕ ОЛАРҒА ӘСЕР ЕТЕТІН ФАКТОРЛАРДЫҢ БАЙЛАНЫСЫ

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Мақсаты: Дәрігерлік білімі жоқ медицина қызметкерлеріндегі стресс факторлары мен мәдени интеллект арасындағы байланысты зерттеу.

Материалдар мен әдістер: Біздің мақсатымыз мәдени интеллект пен үрей арасындағы корреляцияны талдау болды. Қатысушылардың демографиясы, кәсіби білімі, түрік тілінде расталған Мәдени интеллект шкаласы және түрік тілінде расталған Бек Стресс инвентаризациясын қамтитын 41 сұрақтан тұратын сауалнама жүргізілді.

Нәтижелер: Зерттеуге жедел жәрдем бөлімінде жұмыс істейтін 58 дәрігерлік білімі жоқ қызметкер қатысты. Стресстік өлшемдер мен мәдени интеллект шаралары арасындағы байланыс сызықтық регрессиялық талдау арқылы салыстырылды. Жыныс, кәсіп, білім немесе төтенше жағдайлар қызметінің дайындығымен ешқандай корреляция табылмады. Мәдени интеллект пен жас, жұмыс уақыты және шұғыл көмек бөліміндегі жұмыс уақыты арасындағы корреляциялық талдаулар шұғыл көмек бөліміндегі жұмыс уақыты мен мәдени интеллект арасындағы оң корреляцияны көрсетті (r=0,28, p=0,028).

Қорытынды: Дәрігерлік білімі жоқ медициналық қызмет көрсетушілер мәдени интеллект және мәдени сезімталдық ұғымдарын және олардың күйзеліске қалай қатысы барын білуі керек.

Түйін сөздер: мәдени интеллект критерийлері, қабылданған стресс, дәрігерлік білімі жоқ қызметкерлер.

Introduction

As a result of the globalization that emerged after the development of science and technology, borders have disappeared in many countries, and groups of people from different ethnic origins, cultures, and religions have begun to live together. The concept of cultural intelligence has entered the literature in recent years [1,18]. Due to the changes in the structure of the society in multinational nations, the differentiation of the population, the economic transformation, and the shift in family styles and lifestyles, business and management also make sufficient decisions. Although it is known, it is less known among healthcare professionals [12].

Until recent years, due to the homogeneity of the ethnic structure of the health workers in Turkey, the cultural competence and intelligence levels of the health workers have not been sufficiently addressed. However, in recent years, there have been wars between countries in many geographies in the world and there has been a severe increase in the number of foreigners due to the increasing wave of immigration [2,20,21]. In recent years, the development and measurement of cultural intelligence have gained importance due to the frequent contact of healthcare professionals with patients from different cultural backgrounds. One of the reliable research methods, the Cultural Intelligence (CQ) Scale is one of the validated procedures measuring cultural competence and cultural intelligence. In order for healthcare professionals to communicate effectively with people of different ethnic origins, they need to have intercultural communication skills and work programs may need to be prepared for this [13].

The issue of stress in healthcare workers has received a lot of attention and continues to be the subject of research in many studies. It has been shown that the stress factor is one of the most important problems in reflecting the knowledge and skills to life, both during and after the training of the employees. In addition, it is known that many

mistakes of many employees during clinical practice are stress factors. One of the tools used to evaluate the stress level experienced by healthcare professionals in clinical practice is the Perceived Stress Scale [9,10]. There are not enough studies in the literature evaluating the relationship between stress factors and cultural intelligence in healthcare workers. Therefore, in this study, we wanted to examine the relationship between stress factors and cultural intelligence in non-doctor health workers.

Materials and Methods
Study design and setting

Our study was cross-sectional on tertiary training and research in hospital emergency medicine departments. Our aim was to analyze the correlation between Culturel intelligence and anxiety.

Study participants and sampling

At the beginning, all non-physician health workers (nurse, midwife, emergency medical technician, paramedic and health officer) working in the emergency department of the hospital were given consent and a questionnaire. 58 participants who agreed to participate in the study and gave their consent were included in the study.

Data collection tool and technique

In the study, a 41-question questionnaire was applied, including the demographic data of the participants, their professional knowledge, the Cultural Intelligence Scale validated in Turkish and the Beck Stress Scale validated in Turkish.

Cultural Intelligence Scale

Cultural intelligence is determined by measuring the ability to perform multiculturalism and intercultural communication. It was first used in the 2000s. The cultural intelligence scale, which was developed by Van Dyne et al. in 2007, performs measurements in four subgroups Beck Stress Scale [5].

The validation research on Cultural Intelligence in our country was carried out by Arastaman. The first 4 questions of the Cultural Intelligence scale, which consists of 20 questions answered using a 7-point Likert scale, are metacognitive, questions 5-10 are cognitive, questions 11-15 are motivational and questions between 16-20 are behavioral factors. According to the answers given by the participants to the questions, they were scored on a 7-point Likert scale and the average of the obtained scores was used [3].

Perceived Stress Scale

Perceived Stress Scale environment as people participating in the study experienced their stress. Two sub-factors of the PSS were used for Turkish validity and map analysis by Eskin et al. Factor 1 is defined as the perception of insufficient self-efficacy and factor 2 is defined as the perception of stress. Questions are scored on a 5-point scale (never, almost never, sometimes, quite often, very often). Questions 4, 5, 6, 7, 9, 10, and 13 are scored in reverse. Questions defining factor 1; While questions 2, 4, 5, 6, 8, 9, and 10 define Factor 2; Questions 1, 3, 7, 11, 12, 13, and 14 were calculated and average scores were used [6].

Ethical consideration

This study was conducted in the form of a questionnaire on non-physician healthcare professionals working in the emergency department of a tertiary education and research hospital after the approval of the Antalya Training and research hospital ethics committee (2022-367).

Statistical Analysis

The obtained data were analyzed in the appropriate statistical program (SPSS v.23, IBM). The findings were analyzed at 95% confidence interval and 5% significance level. Number and percentage in categorical data as descriptive statistical methods in the evaluation of data; mean, standard deviation, median, minimum-maximum were used in numerical data. In the statistical analysis, firstly, whether the groups were suitable for normal distribution was examined with the Kolmogorow Smirnow or Shapiro Wilks test. Student's T test and Mann Whitney U tests were used in the evaluation of numerical data, and chi-square test was used in the evaluation of categorical data. Linear regression analysis and two-way ANOVA were used to evaluate the relationship between the data. Data with a p value of 0.05 and below were considered significant.

Result

58 non-physician people working in the emergency department were included in the study. 29.3% of these participants were women. The mean age of the participants was found to be 35.93 (9.17). Descriptive information is included in Table 1.

Table 1.
Study group characteristics.

Variables	N	%
Gender		
Male	41	70,7
Female	17	29,3
Education		
High-school	3	5,2
Associate degree	14	24,1
Bachelor	36	62,1
Master degree	5	8,6
Profession		
Nurse	41	70,7
Midwife	8	13,8
Emergency medicine technician	3	5,2
Paramedic	3	5,2
Health offiicer	3	5,2
Emergency medicine education		
Yes	31	53,4
No	27	46,6
	Mean (SD)	
Age	35,93 (9,17)	
Worktime	13,7 (9,86)	
Worktime on emergency	6,48 (5,55)	

The Cultural Intelligence scale was analyzed under four subheadings: metacognitive (CQ1), cognitive (CQ2), motivational (CQ3), and behavioral (CQ4). In the internal consistency assessment of the cultural intelligence scale, the Cronbach alpha score was found to be 0.944. The Beck stress scale is a two-factor scale, Stress related self-efficacy beliefs (PS1) and Stress related feelings of helplessness (PS2), with a Cronbach alpha score of 0.898 in the internal consistency assessment. The score distributions of the scales are given in Table 2.

Table 2.

Cultural Intelligence and Perceived Stress Scale analysis

Scale	Subscale	Shortname	Mean	SD	Cronbach's Alpha
Cultural Intelligence	Metacognitive	CQ1	4,95	1,06	0,944
	Cognitive	CQ2	5,71	1,18	
	Motivational	CQ3	4,01	1,82	
	Behavioral	CQ4	4,96	1,43	
Perceived Stress Scale	Stress related self-efficacy beliefs	PS1	5,11	1,24	0,898
	Stress related feelings of helplessness	PS2	3,4	0,69	

SD: Standard deviation

The correlation findings found in the Pearson R correlation analysis performed with the Beck stress scale factors are given in Table 3.

The relationship between stress criteria (PSS) and Cultural Intelligence criteria (CQ) was compared by linear regression analysis. No correlation was found with gender, occupation, education and emergency service education (Table 4).

In the correlation analysis between CQ and age, working time and working time in the emergency room, a positive correlation was found between working time in the emergency room and CQ (r=0.28, p=0.028) (Table 5).

Table 3.

Comparation beetwen PS scale to CQ scale factors.

		R	%95 CI	R2	P value
PS1	CQ1	-0,37	-0,5745 to -0,1250	0,1378	0,004
	CQ2	-0,3563	-0,5628 to -0,1079	0,1269	0,006
	CQ3	-0,3869	-0,5866 to -0,1429	0,1497	0,002
	CQ4	-0,372	-0,5750 to -0,1258	0,1384	0,004
PS2	CQ1	-0,1528	-0,3955 to 0,1099	0,02334	0,252
	CQ2	-0,2793	-0,5014 to -0,02259	0,07798	0,033
	CQ3	-0,3432	-0,5525 to -0,09312	0,1178	0,008
	CQ4	-0,2903	-0,5103 to -0,03462	0,08428	0,027

Table 4.

Lineer regresion analysis of PSS mean and CQ mean

Predictors: PSS MEAN, CQ MEAN

Variables	Beta In	t	p Value
Gender	0,028	0,189	0,851
Profession	0,288	2,015	0,049
Education	0,063	0,424	0,673
Emergency Medicine Education	0,282	1,96	0,055

Table 5.

CQ mean correlations

CQ Mean	R	%95 CI	R2	P value
Age	0,14	-0,1135 to 0,3923	0,022	0,263
Worktime	0,15	-0,1032 to 0,4011	0,025	0,232
Worktime On ED	0,28	0,03251 to 0,5088	0,083	0,028

ED: Emergency department

Discussion

This study was conducted to evaluate the relationship between the perceived stress factor and cultural intelligence in non-physician healthcare professionals.

The developments in science and technology, countries have become tightly connected and today the borders of countries with each other have disappeared and with the coexistence of many cultures and societies, cultural diversity has increased and the togetherness between people has increased [18,13]. If healthcare professionals increase their CQS to a high level, satisfaction in their business life and relationships between people and their

accuracy in the decisions they make can increase [8]. In particular, it was emphasized that high CQS scores and positivity in interaction between cultures were found in studies. It is known that there is a significant linearity between cultural needs and cultural intelligence level [15]. Rahimaghaee et al. reported in their study that individuals with low CQS scores have problems in learning, communicating and interacting in environments [17]. As it is known, the lack of knowledge and cultural differences among health professionals have led to difficulties in establishing relationships between individuals and lead to inequality in the health system [12, 2, 20, 21]. Minimizing these differences due to both cultural and lack of knowledge is only possible with education models. It is known that increasing levels of cultural intelligence in intercultural communication strengthen the experience of empathy and positive interpersonal relationships [10,6]. Majda et al. showed that there is a significant relationship between high CQS levels and the mobility of removing barriers in the cultural relationship. According to reports in many studies, a decrease in stress can be observed with an increase in cultural intelligence levels [12]. According to the results of our study, we showed that there is an inverse relationship between the metacognitive, cognitive, motivational and behavioral intelligence level scales and anxiety levels of non-physician healthcare professionals.

It is known that the stress levels of non-physician health workers increase due to many physical and financial problems. In a recent study, he refers to the increase in stress due to the pandemic situation and the lack of personal protective equipment [7]. It is known that the stress experienced by non-physician health care workers is generally related to the profession, and it is known that health workers who want to provide a good health service to people have an orientation problem and their sensory well-being deteriorates after the increased stress [4]. The constructive factors that improve the general health level on stress are well known [16]. *Sünter et al.* reported that as the working year increased, there was a decrease in the stress scales [19]. Studies have shown that another source of stress is the lack of knowledge about diagnosis, treatment, medical terms and the fear of harming patients during the education period [7]. In a study on sexual reproductive health, it was shown that increased levels of sensory intelligence scale and decreased stress and anxiety [11]. McCann et al. showed that healthcare professionals have an ability to act above cultural levels with increased CQS value in their study. They also showed that there is a negative relationship between increased levels and stress in these healthcare workers [14]. In this study we conducted with non-physician healthcare professionals, we showed that there is a negative relationship between metacognitive, cognitive, motivational, and behavioral cultural intelligence levels and stress levels.

The strength of this study may be more appropriate to be performed in a large population of healthcare professionals for a more reliable assessment of effects and their strength. We are aware that the main limitations of this study are that it is single-site and has a small sample size. Nearly all of the participants were male adults and had limited encounters with potentially culturally diverse customers.

Conclusions

It is important for non-physician healthcare professionals to be aware of the concepts of cultural intelligence and cultural sensitivity and to know the effect of this on stress. It is recommended that health personnel be given awareness programs of this.

References:

1. *Aslan S., Kizir Z.* Bir hastanede çalışan hemşirelerin kültürel duyarlılıkları ile kültürel zekâları arasındaki ilişkinin incelenmesi. Celal Bayar University Health Sciences Institute Journal. 2019. 6(2):115-20. doi:10.34087/cbusbed.527215

2. *Akgün B.M., Tekdoğan Ü.Y., Gürer E.* Prematür ejakülasyon sorunu olan ve olmayan erkeklerin anksiyete ve duygusal zeka düzeylerinin değerlendirilmesi. Socrates Journal of Interdisciplinary Social Studies. 2022;14:58-76.doi: 10.51293/socrates.142

3. *Arastaman G.* A study of validity and reliability evidences of cultural intelligence scale on Turkish academics. Yuksekogretım Journal. 2018. 8(1):1-8.doi: 10.2399/yod.17.025.

4. *Bhurtun H.D., Azimirad M., Saaranen T., Turunen H.* Stress and coping among nursing students during clinical training: An integrative review. Journal of Nursing Education. 2019. 58(5):266-72. doi: 10.3928/01484834-20190422-04.

5. *Doğan S., Karakuş Ş.* Cultural Intelligence: A Definational, Structural and Relational Review Study The Journal of Human and Work. 2020. 7(1):147-69. doi: 10.18394/iid.688722.

6. *Eskin M., Harlak H., Demirkıran F., Dereboy Ç.* The Adaptation of the Perceived Stress Scale Into Turkish: A Reliability and Validity Analysis. New Symposium Journal. 2013. 51: 132-140.

7. *Falatah R.* The impact of the coronavirus disease (COVID-19) pandemic on nurses' turnover intention: an integrative review. Nursing Reports. 2021. 11(4):787-810.doi: 10.3390/nursrep11040075.

8. *Gazzaz Z.J., Baig M., Al Alhendi B.S.M., Al Suliman M.M.O., Al Alhendi A.S., Al-Grad M.S.H. et al.* Perceived stress, reasons for and sources of stress among medical students at Rabigh Medical College, King Abdulaziz University, Jeddah, Saudi Arabia. BMC Med Educ. 2018.18:29. doi: 10.1186/s12909-018-1133-2.

9. *Ksiksou J., Maskour L., Sfendla A., Alaoui M.S.* Psychometric evaluation of the Arabic version of the Perceived Stress Scale in clinical practicum: Validity and reliability in the Moroccan nursing students. Journal of Education and Health Promotion. 2022. 11(1):327. doi: 10.4103/jehp.jehp_598_22

10. *Ksiksou J., Maskour L., El Batri B., Alaoui M.S.* The Effect Of A Mındfulness Traınıng Program On Perceıved Stress And Emotıonal Intellıgence Among Nursıng Students In Morocco: An Experımental Pılot Study. Acta Neuropsychologica. 2022. 20(4): 371-383.doi: 10.5604/01.3001.0016.0894.

11. *Liu S., Zhang X., Wang Q., Xu Y., Huang X., Liu T., Yang Z., Xiang Z., Lu C., Chen Y., Chen J.* Increased attentional network activity in premature ejaculation patients with anxiety revealed by resting-state functional magnetic resonance imaging. European Journal of Neuroscience. 2021. 54(4):5417-26.doi: 10.1111/ejn.15402.

12. *Majda A., Zalewska-Puchała J., Bodys-Cupak I., Kurowska A., Barzykowski K.* Evaluating the effectiveness of cultural education training: Cultural competence and cultural intelligence development among nursing students // Int J Environ Res Public Health. 2021. 18(8):4002.doi: 10.3390/ijerph18084002

13. *Majda A., Bodys-Cupak I.E., Zalewska-Puchała J., Barzykowski K.* Cultural competence and cultural intelligence of healthcare professionals providing emergency medical services. Int J Environ Res Public Health. 2021. 18(21):11547.doi: 10.3390/ijerph182111547

14. *McCann A.S., Tan L., Thornton K.* How's your CQ?: Effect of Study Abroad and Classroom-based Cultural Experiences on Cultural Intelligence Levels in Traditional Students. Frontiers: The Interdisciplinary Journal of Study Abroad. 2023. 35(1):115-51. doi: 10.36366/frontiers.v35i1.711.

15. *Peek E.H., Park C.S.* Effects of a multicultural education program on the cultural competence, empathy and self-efficacy of nursing students. J Korean Acad Nurs. 2018, 43, 690–696.doi: 10.5977/jkasne.2022.28.4.389.

16. *Perry S.J., Richter J.P., Beauvais B.* The effects of nursing satisfaction and turnover cognitions on patient attitudes and outcomes: A three-level multisource study. Health services research. 2018. 53(6):4943-69.doi: 10.1111/1475-6773.12997.

17. *Rahimaghaee F., Mozdbar R.* Cultural intelligence and its relation with professional competency in nurses. Nursing Practice Today. 2017. 4(3):115-24.

18. *Sharifi N., Adib-Hajbaghery M., Najafi M.* Cultural competence in nursing: A concept analysis. Int J Nurs Stud. 2019. 99:103386. doi: 10.1016/j.ijnurstu.2019.103386

19. *Sünter A.T., Canbaz S., Dabak Ş., Öz H., Pekşen Y.* The levels of burnout, work-related strain and work satisfaction in general practitioners. Journal of General Medicine. 2006. 16(1):9-14.

20. *Yildiz U., Ozbas A., Cavdar I., Yildizeli S., Onler E.* Assessment of nursing students' stress levels and coping strategies in operating room practice. Nurse Educ Pract. 2015;15(3):192–195. doi: 10.1016/j.nepr.2014.11.008

Zhou L., Kachie Tetgoum A.D., Quansah P.E., Owusu-Marfo J. Assessing the effect of nursing stress factors on turnover intention among newly recruited nurses in hospitals in China. Nursing Open. 2022. 9(6):2697-709. doi: 10.1002/nop2.969

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