European Journal of Contemporary Education

ELECTRONIC JOURNAL

Distance Learning during the COVID-19 Pandemic: Stress Factors for Female School and University Teachers in Kazakhstan and Kyrgyzstan

Neilya Khibina [a], [*], Aizhan Salimzhanova [a], Zada Khibina [b], Adlet Kariyev [a]

[a] Kazakh National Women's Teacher Training University, Almaty, Republic of Kazakhstan
[b] Aktobe Regional University named after K. Zhubanov, Aktobe, Republic of Kazakhstan

Abstract

According to international studies, teachers experience more stress than representatives of other professions and are included in the group of occupations with a high presence of stress factors. This is due to the hard work of teachers in terms of high responsibility, motivational and personal involvement in pedagogical work, as well as significant participation in communication with school children or students that determine the stressful nature of the teacher's activity. Difficulties were especially noticeable when teachers switched to distance education in the context of the COVID-19 pandemic. This study examines the predictors of stress affecting the mental health of female teachers in schools and universities in Central Asia (Kazakhstan and Kyrgyzstan) during distance (online) learning at the time of the pandemic. In addition, according to the results of the study, it was found that in the conditions of COVID-19, the impact of the level of material and technical security/access on mental health is important when female teachers have a good social climate at work. The study also confirmed that the impact on mental health is most noticeable when female teachers are more actively involved in the decision-making process with specific organizational goals in accordance with a participatory management policy, and female teachers often receive feedback about their work. Female teachers at universities and schools were surveyed using a random stratified sampling method, and an anonymous online survey was conducted. Responses from school and university women teachers/lecturers were collected in Google Forms, which subsequently led to a comparative analysis of stress factors affecting their mental health. A total of 748 female teachers took part in the survey. Empirical research is based on a quantitative research method and uses a survey data collection methodology. Stress factors among female educators were tested by T-test analysis using SPSS.22 software.

Keywords: Pandemic, Covid-19, distance (online) learning, anxiety, depression, stress, women teachers, Kazakhstan, Kyrgyzstan.

---

[*] Corresponding author
E-mail addresses: neilya2204@mail.ru (N.N. Khibina), aizhan.salimzhan@gmail.com (A. Salimzhanova), zada.xibina@mail.ru (Z. Khibina), adlet.kariyev@gmail.com (A. Kariyev)

1. Introduction

The COVID-19 pandemic has adversely affected individuals' mental health in almost every region of the world (Holmes et al., 2020). According to numerous studies, education has been identified as an industry most affected by the coronavirus pandemic, and mental health consequences have been dire (Lee, 2020). In April 2020 there were school closures in almost 196 countries because of the COVID-19 pandemic, and this situation subsequently affected nearly 1.6 billion students worldwide (UNESCO, 2021). Further research indicates that about 40 million children around the world who were about to start school have missed out on important early childhood education because of the pandemic (UNICEF, 2020). In higher education, some universities have suspended their work indefinitely due to the lack of information technology (IT) infrastructure for both students and teachers.

Many studies have focused on the mental wellbeing of students as they faced COVID-19 educational disruptions (Lee, 2020; Shah et al., 2020). However, disruptions in schooling have caused serious psychological problems among educators as well. Poor mental wellbeing among teachers has spillover effects: it can result in negative externalities for their families, their students, and the profession at large. Given the importance of educators' wellbeing, both for their own sake and for the sake of their studies and communities, we examine stressors among female educators in Kazakhstan and Kyrgyzstan during remote online teaching environments in the wake of COVID-19. There are not many studies on teachers' mental health in Kazakhstan or Kyrgyzstan. Teachers and their wellbeing play important role in the development of the region, especially given teacher shortages in Kyrgyzstan (Steiner-Khamsi, Teleshaliyev, 2020). The lack of studies in transition economies shows the unequal conditions the pandemic has imposed on developing countries as opposed to developed countries.

This interdisciplinary research brings together gender, psychological, and educational issues in the context of digitalization and COVID-19. The aim of this study is not only to study the stress factors affecting the mental health of female teachers at schools and universities in the pre-pandemic and after-pandemic periods, but also to develop policy recommendations for the administration of schools and universities, as well as defining educational policies to improve the problems of professional burnout, dissatisfaction and inefficiency in the context of COVID-19. We pay particular attention to the experience of women educators as part of efforts to empower women in Kazakhstan and Kyrgyzstan, who are often considered socially vulnerable groups. Based on this, the study addresses an important and timely issue, focusing on various aspects of distance learning, paying particular attention to people's mental health, including professional burnout and labor productivity.

Ultimately, through quantitative analyses of these primary survey data, we find that the relationship between stressors and the mental health of female school/university teachers during COVID-19 varies from urban to rural areas, and overall can be mitigated through improvements in logistical/technological support and through administrative support and a positive work climate. Thus, the scientific research is aimed at solving three research questions: 1) to determine whether the relationship between stress factors and the mental health of female teachers in urban and rural areas differs, and how the level of material and technical security/access mitigates this relationship; 2) to identify whether the relationship between organizational climate factors and the mental health of female teachers in urban and rural areas differs and how the material and technical security/access mitigates this relationship; and 3) to establish whether organizational climate factors (social climate, participation and clarity of goals or feedback on work results) eliminate stress and whether they have a positive impact on mental health.

2. Literature review

Several researchers have examined student's mental health in the onslaught of the COVID-19 pandemic and the swift switch to remote learning. These have included studies on students' stress (Pajarianto et al., 2020), loss of learning ability (Dorn et al., 2020), limitations in distance learning (Alvares, 2020), psychological stress (Besser et al., 2020; Zhou, 2020) or technostress (Zeeshan et al., 2020), and online migration (Watermeyer et al., 2020; Aveginou, Moros, 2020). However, very few have specifically studied the mental health of educators during COVID-19, especially in the context of transition economies. Some researchers have examined teachers' methods of coping with anxiety (Talidong, Toquero, 2020), while others have studied teacher productivity during the

distance learning period (Purwanto et.al, 2020) and electronic readiness and teacher perception of distance learning (Spinelli et al., 2020).

However, special attention is paid to the mental health of teachers during COVID-19: not only does stress affect teachers' short- and long-term health, but also their students' academic and psychological outcomes (Harding et al, 2019). Further, in regions where teacher shortages were already prevalent, the pandemic may have exacerbated the issue: the risk of experiencing professional burnout was especially high during the pandemic, especially with isolation and the need for rapid retraining (Petrakova et al., 2021).

Previous research on educators' mental health shows that their stress factors commonly include: student fighting (Finlay-Jones, 1986; Hastings, Bham, 2003), student destructiveness and indifference (Ingersoll, 2001; Shirom et al., 2009), unsupportive administrations (Schonfeld, Santiago, 1994), heavy workload (Guglielmi, Tatrow, 1998), and excessive emotional involvement with students, colleagues, parents of students (Kokkinen et al., 2014; Schonfeld et al., 2010). A great deal of COVID-specific research on teachers' stress focuses on stress associated with online teaching (MacIntyre et al., 2020, Košir et al., 2020, Pressley et al., 2021, Klapporoth et al., 2020). Despite the growing number of educators teaching entirely online, the literature remains limited in studies about factors contributing to their stress and job satisfaction, and such studies are largely confined to wealthy countries.

Some research has shown that teachers who perceived additional support from a supervisor felt less stressed in a distance learning environment, while teachers who reported taking care of their own children felt more stressed (Košir et al., 2020). However, increased stress made worse by fear of contracting COVID-19 and related turmoil often induces anxiety-related behaviors (Besser et al., 2020, Oducado et al., 2021).

Ultimately, of these studies on education in the context of the global pandemic, focus is on the challenges faced by school teachers (Hadar et al., 2020; Purwanto et al., 2020), university departments (Zeeshan et al., 2020; Talidong, Toquero, 2020; Ramakanta, Sonali, 2020) and students or children (Alvares, 2020), while the university administration/management issues are largely not considered as stressors for teachers. One study does examine the role of administrative support (e.g. support from school principals), but finds this varies by cultural attitudes. This subject requires additional study, which we aim to address herein in the context of Kazakhstan and Kyrgyzstan.

Finally, our study focuses on the experiences of female educators. Studies have found that COVID-19 brought higher rates of stress to female teachers relative to male (Oducado et al., 2021). In the context of Central Asia in particular, there is a lack of gender-focused research on stress factors among female school and university teachers during the COVID-19 pandemic. In response to existing theoretical and practical gaps, this study attempts to provide empirical evidence and up-to-date data on mental health, professional burnout and labor productivity among female teachers in the region.

3. Materials and methods
Procedure Sample and Participant Selection

Respondents of the survey: Female teachers of schools and universities involved in distance learning.

The survey questions ask teachers about their experiences with anxiety and depression as well as their experiences with school-related technology, administrative support, and leadership. The survey was conducted starting from August to November 2020, when schools were mandated to take on remote instruction, and contained questions related to respondents' experiences before and during the pandemic. The project uses stratified random sampling: self-completion forms of questionnaires were randomly distributed among female teachers at schools and universities in Kazakhstan and Kyrgyzstan. Research among school and university teachers has been facilitated through official contacts and assistance from state educational administrations and embassies. Questionnaires were developed in Kazakh and Russian languages. A pilot test of the research method was conducted with 10 university and 5 high school teachers to assess the clarity and coherence of the survey questions. Starting from August 2020 to November 2020, 850 respondents were contacted remotely and 752 completed questionnaires were received, indicating 88.5 % response rate. The target audience was reached by official letters distributing a link to the online survey through various channels such as the Ministry of Education and Science of the Republic of Kazakhstan, education management agencies at the local or regional levels, UNESCO regional

offices and Kazakhstan and Kyrgyzstan embassies. After selection of completed questionnaires, 748 valid cases were identified and stored for further analysis. The sample is almost equally representative of both urban (46 %) and rural areas (54 %). The target audience is represented by school and university teachers of secondary education.

These studies were analyzed by SPSS statistics (SPSS-22), paired sample t-test, independent sample test, Pearson correlation analysis, and moderation regression analysis. The results were interpreted in the form of statistical tables. The study was designed as an empirical quantitative study using area stratified random sampling based on a survey using the following scales:

1) Scale of perceived stress – a scale consisting of 10 questions, the task of which is to determine how stressful people consider the previous month of their life. It was designed to assess the level of perceived stress, that is, the subjective perception of the level of tension in a situation (Cohen et al., 1983; Cohen, Williamson, 1988).

2) The Symptom Checklist-90 Scales (SCL 90-R) for measuring anxiety and depression is a relatively concise self-report psychometric tool (questionnaire) published by the Clinical Assessment Division of the Pearson Assessment & Information Group. It is designed to assess a wide range of psychological problems and symptoms of psychopathology (Deregatis, 1977; González de Rivera et al., 1989).

3) Quality-work-competence (QWC version) to measure employees' perceptions of the psychological climate (Deregatis, 1977; González de Rivera et al., 1989).

The data were collected using a self-administered online questionnaire. The survey questionnaire consisted of 5 sections such as: Demographic Profile; Perceived Stress Scale; Anxiety Depression (SCL-90-R) Scale; Quality of Work-Competence Scale (QWC); Material and Technical Security/Access level.

And in each section, there is a category of questions that serve as measurements of the tested variables formulated on the basis of the psychometric Likert scale and consists of five positions (1 – strongly disagree, 5 – strongly agree).

Stress factors were measured across 3 dimensions: perceived stress, anxiety, depression.

Organizational climate factors were measured across 4 dimensions: social climate, participatory management, clarity of purpose, performance feedback.

The research tool were designed to measure each element of the measurement of stress factors and organizational climate (the survey instrument was designed to measure each item dimension of Stress and Organizational Climate factors). Namely, the certainty of perceived stress and clarity of purpose was measured by 4 points, the measurement of anxiety – by 6 points, depression – by 10 points, social climate – by 5 points, and aspects of management with participation and feedback on the results were measured by 3 points (perceived stress and goal clarity were measured by 4 items, anxiety dimension by 6 items, depression by 10 items, social climate by 5 items, and participatory management and performance feedback dimensions were measured by 3 items).

In order to check the reliability of the scales used in the survey questionnaire, a reliability analysis was carried out: the Cronbach's alpha reliability coefficient for all blocks of the research instrument was in the range of 8.861 – 0.904 (Cronbach's alpha > 0.7). Since this indicator exceeds 7.0, which is the lowest acceptable reliability indicator, the scales adopted in the study are considered reliable.

4. Results

The study contains the data on demographic characteristics of respondents in Kazakhstan and Kyrgyzstan, i.e. with data on the age of participants: 23 % of respondents were aged 18-30 years (23.3 %), 27.9 % – 31-40 years, 25.3 % – 41-50 years and 20.6 % – 51-60 years. Only a few participants were over 60 years old (2.9 %).

Indicators relating to long-term work experience or seniority were also relatively balanced. Approximately, 21 % of the participants had less than 5 years of work experience, and 17 % had 6-10 years of work experience. Others had work experience of 11-15 years (13.8 %), 16-20 years (12.0 %), 21-25 years (11.2 %), 26-30 years (10.8 %) and more than 30 years (14 %). As for qualifications, half of the sample had secondary education (45.9 %), while others had bachelor's degrees (20.5 %) and master's degrees (21.0 %). PhD level (4.3 %), assistant professors (1.2 %), associate professor (2.8 %) and professors (4.4 %) were significantly less represented in the sample.

Table 1. Demographic characteristics of respondents (descriptive statistics)

	n	%
Age		
18-30 years old	174	23.3
31-40 years old	209	27.9
41-50 years old	189	25.3
51-60 years old	154	20.6
over 60 years old	22	2.9
Years of teaching experience		
under 5	157	21
6-10	128	17.1
11-15	103	13.8
16 -20	90	12.0
21-25	84	11.2
26 – 30	81	10.8
over 30	105	14.0
Individual qualification		
School teacher	343	45.9
Bachelor level	153	20.5
Master's level	157	21.0
PhD level	32	4.3
Assistant Professor	9	1.2
Associate Professor	21	2.8
Full Professor	33	4.4
Level of education that educators teach		
Secondary education	465	62.2
Undergraduate	253	33.8
Graduate	30	4.0
Subject area that educators teach		
Social sciences	90	12.0
STEM	223	29.8
Arts and Humanities	417	55.7
Business and Economics	18	2.4
Living area		
Urban	355	47.5
Rural	393	52.5
Family environment		
I live with family	686	91.7
I live alone	48	6.4
I live with my friends/roommates	14	1.9
Number of children		
No children	108	14.4
1	160	21.4
2	214	28.6
3	151	20.2
4	59	7.9
5	35	4.7
more than 5	21	2.8
Working space at home		
I work in a shared room	164	29.9
I work in a separate room	498	66.6
I have no special place to work	86	11.5
Family income		
I am the sole earner	199	26.6
Other family members also contribute financially	549	73.4

The majority of participants taught at the secondary education level (62.2 %), while a smaller number taught at the undergraduate (33.8 %) and graduate (4.0 %) levels. As for the subject area in which the respondents participated, the largest group was arts and humanities (55.7 %), followed by STEM (29.8 %), social sciences (12.0 %) and finally Business and economics (2.4 %).

The sample is almost equally representative of both urban (46.0 %) and rural (54 %) teachers. Almost all participants lived with their families (91.7 %), and only a few lived alone (6.4 %) or with their friends or roommates (1.9 %). As for the number of children, the majority of participants had one child and two or three children (21.4 %, 28.6 % and 20.2 %, respectively). A smaller number had no children (14.4 %) or four, five or more than five children (7.9 %, 4.7 % and 2.8 %, respectively). A smaller number had no children (14.4 %) or four, five or more than five children (7.9 %, 4.7 % and 2.8 %, respectively). Working space at home – 66.6% of these specialists had a separate room for work, while the rest of the participants worked in a common room

(29.9 %) or did not have a special place to work (11.5 %). Finally, the majority of the sample had family members (others) contributing financially (73.4 %), while only 26.6 % were the sole breadwinners. Descriptive statistics are given in Table 1.

We use several independent randomized T-tests to examine stress factors among female school and university teachers in Kazakhstan and Kyrgyzstan during a remote online environment in the context of COVID-19. As shown in Table 2, T-test results show that a significant difference was found between anxiety and depression on one scale before the pandemic and during the pandemic. With respect to anxiety and depression as separate scales, significant differences were also found both between pre-pandemic anxiety and anxiety during the pandemic; and between depression before the pandemic and depression during the pandemic. These results suggest that female teachers felt more overwhelmed and anxious during the pandemic than before the pandemic. With regard to anxiety and depression as separate scales, significant differences were also found between pre-pandemic anxiety and anxiety during the pandemic and between depression before the pandemic and depression during the pandemic.

Table 2. Paired Samples T-Test (SCL, anxiety, depression): before and during the pandemic

Variables	Mean	SD	Mean	SD	t-value	Sig (2-tailed)
Anxiety & Depression	1.12	0.61	1.38	0.74	-15.03	**0.000***
Anxiety	1.42	0.69	1.74	0.85	-15.68	**0.000***
Depression	0.93	0.63	1.15	0.74	-13.12	**0.000***

*p<0.05

Independent sample T-tests were also used to compare anxiety and depression scores in urban and rural areas, as shown in Table 3. Although no significant differences were found in pre-pandemic anxiety scores between urban and rural residents, significant differences were found between the same two groups, urban and rural areas, in anxiety during the pandemic.

The results suggest that during the pandemic, teachers living in cities reported higher levels of anxiety compared to teachers living in rural areas. Similarly, significant differences were found: (a) between urban and rural areas for pre-pandemic depression; (b) between urban and rural areas in relation to depression during the pandemic; (c) between urban and rural areas for anxiety and depression as a single pre-pandemic scale; (d) between urban and rural areas for anxiety and depression as a single scale during the pandemic. These results suggest that urban women teachers experienced higher levels of depression compared to their rural counterparts. To sum up, urban teachers felt more anxious and overwhelmed during the pandemic than teachers from rural areas.

As illustrated in Table 3, the results show that both before and during the pandemic, female teachers living in urban areas were more anxious and depressed than rural teachers.

Additionally, despite a low sample of respondents from Kyrgyzstan, results of comparative cross-country analysis in Kazakhstan and Kyrgyzstan (SCL, anxiety, depression) reveal significant differences between the two countries on all scales. As shown in Table 4, these differences exist across (a) scores for anxiety and depression as a single pre-pandemic scale; (b) anxiety and depression scores as a single scale during the pandemic; (c) pandemic anxiety scores; (d) pre-pandemic depression scores; (e) points for depression during the pandemic for residents of Kazakhstan and Kyrgyzstan. The results show that women teachers in Kyrgyzstan experienced higher levels of anxiety and depression compared to female teachers in Kazakhstan both before and during the pandemic. Thus, it was found that female teachers in Kyrgyzstan during the pandemic were more likely to experience a feeling of stress, anxiety, emotional burnout compared to female teachers in Kazakhstan. Differences in the identification of anxiety and depression were also revealed, female teachers in Kyrgyzstan more often than female teachers in Kazakhstan felt in a state of anxiety and depression. When determining the levels of stress in women teachers, they are also influenced by the characteristics in their regions of residence. When comparing urban and

rural areas, more differences were found. That is, women teachers from both countries living in the city experienced frequent and high levels of stress during the pandemic, while those who lived in rural areas experienced lower levels of stress.

Table 3. Independent Samples T-Test (SCL, anxiety, depression): Urban and rural areas

Variables	Women teachers from rural areas		Women teachers from urban areas		t-value	Sig (2-tailed)
	Mean	SD	Mean	SD		
Anxiety & Depression (before the pandemic)	1.17	0.61	1.07	0.61	2.14	**0.033***
Anxiety & Depression (during the pandemic)	1.51	0.76	1.25	0.70	4.83	**0.000***
Anxiety (before the pandemic)	1.46	0.67	1.39	0.71	1.47	**0.143**
Anxiety (during the pandemic)	1.91	0.87	1.59	0.81	5.13	**0.000***
Depression (before the pandemic)	0.88	0.62	0.99	0.64	2.33	**0.020***
Depression (during the pandemic)	1.05	0.71	1.27	0.76	4.14	**0.000***

*p<0.05

Table 4. Comparative Cross-Country Analysis between Kazakhstan and Kyrgyzstan (SCL, anxiety, depression)

Variables	The case of Kazakhstan		The case of Kyrgyzstan		t-value	Sig (2-tailed)
	Mean	SD	Mean	SD		
Anxiety & Depression (before the pandemic)	1.10	0.61	1.55	0.59	-3.48	**0.001***
Anxiety & Depression (during the pandemic)	1.35	0.73	2.07	0.68	-4.62	**0.000***
Anxiety (before the pandemic)	1.41	0.69	1.71	0.56	-2.04	**0.042***
Anxiety (during the pandemic)	1.72	0.85	2.41	0.79	-3.83	**0.000***

Similar to comparative cross-country analysis, levels of anxiety and depression were found to differ between female teachers in rural and urban areas. Teachers in rural areas reported lower levels of anxiety and depression compared to teachers in urban areas. The same trend was observed

with the level of depression before the pandemic. Teachers in urban areas reported higher levels of depression before the pandemic than teachers in rural areas.

The organizational climate scale consisted of four items (subscales): (a) Social climate, (b) Participatory management, (c) Clarity of goals, and (d) Feedback on performance. Participants had to read each item and choose one of five options for each statement: "strongly disagree", "disagree", "neither agree nor disagree", "agree", "totally agree". Examples of social climate statements include the following statements: "There is a pleasant atmosphere at my workplace", "There is unity and good relations between my colleagues". To compare the estimates of the social climate for residents of urban and rural areas, the t-test of independent samples was used.

In addition, the results of independent samples t-tests were used to compare the estimates of residents of rural and urban areas (Table 5). As a result, there was no significant difference in the social climate between urban residents (t (872), p = 384) and (M = 2.38, SD = 0.82) and rural residents (t (874), p = 382) and (M = 2.43, SD = 0.86). Similarly, there were significant differences between the participation rates of urban residents t = 2.084, p = 0.38, M = 2.17, SD = 0.87, and rural residents t = 2.082, p = 0.38, M = 2.30, SD = 0.86. The indicators of the four goals and the clarity of the goal for urban residents are t = -2958, p = 003 and M = 2.23, SD = 0.83, for rural residents t = -2958, p = 003 and M = 2.41, SD = 0.83. A comparison of respondents' feedback indicators with performance results showed that there is also a difference between urban residents t = - 2524, p = 012 and M = 2.25, SD = 0.87 and rural residents t = - 2519, p = 012 and M = 2.41, SD = 0.84.

Table 5. Independent samples t-test for the social climate scale: urban and rural areas

Variables	Urban areas		Rural areas			Sig (2-tailed)
	Mean	SD	Mean	SD	t-value	
Social Climate	2.38	0.82	2.43	0.86	-0.872	0.384

*p<0.05

Results of the t-test of independent samples (SCL, participatory management): Urban and rural areas. The results show that there is a significant difference in the degree of participation in management between urban and rural female teachers. Insofar as it is established that the P-value is equal to P = 0.038, while (alpha < 0.05) deviations are considered significantly different, as shown in Table 6. The results show that the participation of female teachers in the decision-making process was higher than in rural areas compared to the residents of urban areas.

Table 6. Independent samples t-test for the scale of participatory management: Urban and rural areas

Variables	Urban areas		Rural areas			Sig (2-tailed)
	Mean	SD	Mean	SD	t-value	
Participation	2.17	0.87	2.30	0.86	-2.084	0.038*

*p<0.05

Results of independent t-test samples (SCL, clarity of purpose): Urban and rural areas. The results show that there is a significant difference in the clarity of the goal scale between urban and rural female teachers. Since the found value of p is equal to p = 0.003 (alpha < 0.5), it is assumed that the deviations differ significantly, as shown in Table 7. This means that the village school administration provides more support in terms of clarity of goals than the city administration. Schools, which means that rural female teachers work in more favorable conditions than their urban counterparts. These results confirm and complement the research data presented in the literature review.

Table 7. T-test of independent samples on the scale of objective clarity: Urban and rural areas

	Urban areas		Rural areas			
Variables	Mean	SD	Mean	SD	t-value	Sig (2-tailed)
Goals Clarity	2.23	0.83	2.41	0.83	-2.958	0.003*

*p<0.05

Independent samples of T-test results (SCL, performance feedback): Urban and rural areas. Since the calculated value α = 0.05, the p value for performance feedback is p = 0.012, so the result shows that the deviations differ significantly, as shown in Table 8. These results indicate that female teachers in rural areas receive more feedback about their work from management than female teachers who live and work in urban areas.

Table 8. Independent samples t-test for performance feedback scale: Urban and rural areas

	Urban areas		Rural areas			
Variables	Mean	SD	Mean	SD	t-value	Sig (2-tailed)
Performance feedback	2.25	0.87	2.41	0.84	-2.524	0.012*

*p<0.05

An independent sample of the T-test was used for residents of Kazakhstan and Kyrgyzstan to compare assessments on four scales (social climate, participation, clarity of goals and objectives, as well as feedback on the results of work). The results revealed significant differences between the two countries on all scales, as shown in Table 8:

(a) Social climate: t = -,398, p = ,691
T = -,390, p= ,701

(b) Participation: t = -.905, p = .366
T = -,882, p= ,387

(c) Clarity of objectives: t= -.005, p= .996
T =005, p= .996

(d) Performance feedback: t = 551, p = .609
T =449, p = .658

An independent sample T-test did not reveal a significant difference on the feedback scale between Kazakhstan and Kyrgyzstan. The deviations do not differ significantly, as shown in the Table 9. These results indicate that female teachers in Kazakhstan and Kyrgyzstan equally perceive feedback on academic performance from school administrators.

What we can see is that a comparison of female teachers' Performance-Competence scores (QWC) also showed differences between urban and rural areas, suggesting that teachers in rural areas had more favorable conditions in this regard. Although the assessments on the subscale of professional climate factors did not differ significantly between the two groups, an analysis of the participation of the management on the subscales, clarity of goals and objectives and feedback on the results showed significant differences between rural and urban areas. Compared to female teachers working in cities, female teachers in rural areas felt more involved in the decision-making process, felt that the goals in their workplace were clearer, and reported receiving better and more frequent feedback on performance. Thus, it can be concluded that the leadership of rural educational institutions provides greater support in terms of ensuring broader participation in the academic decision-making process, creating conditions for clarity of goals and quality, as well as regular feedback on the results of work than the leadership of urban educational institutions. However, it was reported that the level of material and technical security/access in urban areas is higher. Teachers in rural areas felt that their workplaces were less equipped to support online education compared to schools located in cities.

Table 9. Group statistics on four scales (QWC) for residents of Kazakhstan and Kyrgyzstan

	Your country	Mean	Std. Deviation	Std. Error Mean
Social_Climate	Kazakhstan	2,4066	,84804	,03156
	Kyrgyzstan	2,4783	,86705	,18079
Participation	Kazakhstan	2,2392	,86866	,03233
	Kyrgyzstan	2,4058	,89305	,18621
Goal_objectives_clarity	Kazakhstan	2,3251	,83628	,03112
	Kyrgyzstan	2,3261	,83746	,17462
Performance_feedback	Kazakhstan	2,3398	,85825	,03194
	Kyrgyzstan	2,2464	,98585	,20556

In order to study the relationship between stress factors and the level of material and technical security/access, the reliability of the level of material and technical security/access was first tested (Table 10). The 10-point scale was found to be reliable. Cronbach's alpha was 0.895.

Table 10. Cronbach's alpha results for the Level of Material and Technical Security/Access

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.895	.895	10

The correlation coefficient of the product and the Pearson's Product Moment correlation was calculated to assess the relationship between two variables – the level of material and technical security/access and anxiety and depression (SCL-90-R) (Table 11). The latter was analyzed both as a single scale (SCL-90-R) and as two separate scales: (a) anxiety and (b) depression. During the pandemic, there was a moderate negative correlation between the level of material and technical security/access and anxiety and depression (SCL-90-R) ($r = -0.103^{**}$, $n = 748$, $p < .005$). When considering anxiety and depression separately, no correlation was found between the level of material and technical security/access and anxiety during the pandemic ($r = -0.068$, $n = 748$, $p < .063$), and a moderate negative correlation was found between the level of material and technical security/access and depression during the pandemic ($r = -0.116^{**}$, $n = 748$, $p < .001$).

In general, this means that the higher the level of material and technical security/access of teachers, the lower the level of depression of teachers. However, changes in the level of material and technical security/access were not associated with teachers' concern during the pandemic.

Table 11. Pearson's Product Moment correlation coefficient

	Anxiety and depression (SCL-90-R) during the pandemic	Anxiety during the pandemic	Depression during the pandemic
Level of Material and Technical Security/Access	-,103**	-,068	-,116**

**. Correlation is significant at the .01 level

In order to compare the scores for level of material and technical security for the residents of urban and rural areas, independent sample T-tests were used. The result suggests that the variances of two groups are significantly different: The results suggest that the level of material and technical security of female teachers was lower in rural areas (M = 1.87, SD = 0.78) compared to the teachers of urban areas (M = 2.22, SD = 0.76) as shown in the Table 12.

Table 12. Independent Samples T-test for the Level of Material and Technical Security: Urban and Rural Areas

Variables	Urban		Rural			
	Mean	SD	Mean	SD	t-value	Sig (2-ailed)
Level of Material and Technical Security	2.22	0.76	1.87	0.78	6.15	**0.000***

*p<0.05

We use the same method to compare the scores of the level of material and technical security scale between Kazakhstan and Kyrgyzstan. The results revealed that there is no significant difference found between Kazakhstan and Kyrgyzstan women teachers. As p-value found is p = 0.251 (alpha > 0.05), it is considered that the variances are not significantly different as shown in the Table 13. The results show that female teachers in both countries had similar perceptions of the level of material and technical provision of their schools.

Table 13. Comparative Cross-Country Analysis between Kazakhstan and Kyrgyzstan (SCL, Level of Material and Technical Security)

Variables	Kazakhstan		Kyrgyzstan			
	Mean	SD	Mean	SD	t-value	Sig (2-tailed)
Level of Material and Technical Security	2.04	0.79	1.85	0.94	1.149	**0.251**

*p<0.05

To assess the relationship between stress factors and the level of material and technical security, the correlation coefficient of the product and the Pearson's Product Moment correlation was calculated (Table 14). There was a moderate negative correlation between level of material and technical security and anxiety and depression during the pandemic. When looking at anxiety and depression separately, no correlation was found between level of material and technical security and anxiety during a pandemic, and a moderate negative correlation was found between level of material and technical security and depression during a pandemic. In general, this means that the higher the level of material and technical security of teachers, the lower the level of depression among teachers. However, the changes in the level of material and technical security were not related to teachers' concerns during the pandemic. In other words, the more equipped the teachers felt the school was, the less depressed they felt. And the less equipped the school was perceived to be, the more depressed the teachers felt.

In Table 14, we can see that the higher the level of material and technical security of educational institutions, the lower the level of depression among female teachers.

Table 14. Correlations between Stress Factors and the Level of Material and Technical Security

Variables		Level of Material and Technical Security	SCL (Anxiety & Depression) during the pandemic	SCL (Anxiety) during the pandemic	SCL (Depression) during the pandemic
Level of Material and Technical Security	Pearson Correlation	1	-.103**	-.068	-.116**
	Sig. (2-tailed)		.005	.063	.001
	N	748	748	748	748
SCL (Anxiety & Depression) during the pandemic	Pearson Correlation	-.103**	1	.913**	.960**
	Sig. (2-tailed)	.005		.000	.000
	N	748	748	748	748
SCL (Anxiety) during the pandemic	Pearson Correlation	-.068	.913**	1	.763**
	Sig. (2-tailed)	.063	.000		.000
	N	748	748	748	748
SCL (Depression) during the pandemic	Pearson Correlation	-.116**	.960**	.763**	1
	Sig. (2-tailed)	.001	.000	.000	
	N	748	748	748	748

Notes: ** Correlation is significant at the 0.01 level (2-tailed).

Correlations between organizational climate factors and the level of material and technical security/access

To assess the relationship between organizational climatic factors and the level of material and technical security/access, the Pearson's Product Moment correlation coefficient was carried out. The result shows that there was a strong and positive correlation between these two variables, and the relationship was directly proportional (r = 0.591, n = 748, p = 0.000), as shown in Table 15. This means that the higher the level of material and technical security/access of female teachers in the conditions of COVID-19, the better the organizational climate in educational institutions.

Table 15. Correlations between organizational climate factors and the level of material and technical security/access

Variables		Organizational Climate Factors	Material & Technical Security
Organizational Climate Factors	Pearson Correlation	1	0.591**
	Sig. (2-tailed)		0.000
	N	748	748
Material Technical Security	Pearson Correlation	0.591**	1
	Sig. (2-tailed)	0.000	
	N	748	748

Notes: **. Correlation is significant at the 0.01 level (2-tailed).

5. Discussion

The main objective of this study is to develop strategic recommendations for the leadership of universities and schools in Central Asia and policy makers in the field of education. Currently, the Ministries of Kazakhstan, heads of schools and universities are actively working on issues related to students (pupils) and teachers, paying special attention to online and offline education in the context of COVID-19. In this regard, this study addresses an urgent topic and generates empirical data to facilitate decision-making on distance learning (particularly aspects of distance learning such as the mental health of female teachers). Given our results, we recommend improving technological infrastructures (especially in rural areas) and support for teachers (educational institutions in cities), as well as improving their ability to participate meaningfully in organizational decisions. This will help reduce female teachers' stress, ultimately improving their working conditions and, ultimately, student outcomes. In addition, this study aims to provide tools to improve the lives and working conditions of women working as educators in Kazakhstan and Kyrgyzstan. Due to its interdisciplinary focus and theoretical and practical implications in terms of gender, education and psychology, the study fills gaps in research in the Central Asian context (including both in Kazakhstan and Kyrgyzstan).

The results of the study show that both before the pandemic and during the pandemic, anxiety and depression were more severe in urban female teachers than anxiety and depression in teachers living in rural areas. The question arises why teachers in urban areas may be exposed to a higher level of stress than teachers in rural areas. According to researchers Çifçi and Demir, teachers living in urban areas may have fewer opportunities for physical activity compared to people living in rural areas, so they experience higher levels of stress (Çifçi, Demir, 2020).

Researchers looking for the causes of motivational deprivation of teachers, as a rule, focus on institutional factors. For example, based on a study conducted in 2015–2016, D.L. Konstantinovsky, M.A. Pinskaya and R.S. Zvyagintsev concluded that external stress factors cause deformation of the teacher's professional position. The authors refer to these conditions the social context, the characteristics of the territory, the contingent of students, and the high workload not related to teaching, as well as the actual lack of opportunities to participate in administrative decision-making (Konstantinovskiy i dr., 2019).

Earlier studies on urban teachers' problems and stresses show their areas of dissatisfaction are often related to physical harassment, large classes, and lack of close relationships with students (Cook, 1978; Dedrick et al., 1981; Kaiser, Polczynski, 1982).

Authors Trentham and Blackburn, in their survey found that both rural and urban teachers are fairly satisfied with their jobs and very satisfied with their locations (Trentham, Blackburn, 1980). However, there is an evidence that rural and urban teachers' expectations and attitudes relative to work are different. Rural teachers draw more satisfaction from their students and peers. On the other hand, urban teachers were happy to have good facilities and the opportunities for social and cultural development of the urban setting (Trentham, Blackburn, 1980).

Previous study by Shubhra Ojh shows strong relationship was found between job stress, job dissatisfaction and emotional exhaustion. Rural teachers were less stressed than their urban counterparts (Shubhra Ojh, 2016). Author Shubhra Ojh's results are similar to the results by Abel and Sewell (1999). Their study indicates that urban teachers have greater stress (Abel, Sewell, 1999). And also, there is a clear relationship between urban teachers' stress and burnout as a result of having difficult classes, problem students, poor classroom climate, poor working conditions, shortage of resources, lack of recognition and inordinate demands on time leading to burnout (Abel, Sewell, 1999). The factors behind the burnout in the study by the authors Abel and Sewell include: overwhelming workload, discipline problems, low pay, little respect, lack of administrative support and the clerical workload. Author Haberman (2004) in his study also found that stress is greater in urban schools than rural ones.

6. Conclusion

Thus, the results of the study showed that providing an organizational environment and ensuring teachers' access to logistical security and technological resources during distance learning leads to a decrease in perceived stress among female teachers.

Overall, the study concludes that this unprecedented situation has forced teachers to reflect on what can be learned from this crisis and how their views on education have changed. Many called for changes to the curriculum, examination procedures and reporting, wondering if the

education system needed to prioritize differently in the future. For many teachers, this has reinforced their belief in the strength, adaptability, and importance of the teaching profession.

7. Limitations

This study has limitations related to the scope of the study and sample size. The data was collected by using self-administered questionnaires, and information bias could not be eliminated (oversimplification of social reality). The arbitrary design of questionnaires and multiple-choice questions with pre-conceived categories represents a biased and simple view of reality. The use of closed questionnaires and pre-coded forms can derive evasive or deliberately wrong answer. So, there can be problems related to validity and reliability of results.

Also, in this research, online survey method was implemented due to the lack of time, and COVID-19-related lockdowns. Constraints to using surveys to gather data include inflexibility and lack of potential depth. Survey information in this study considers only the surface of the research field and does not make a deeper thrust into it.

To prevent bias in the data, external investigators were recruited to improve the validity and reliability of the interpretation of the results.

References

Abel, Sewell, 1999 – *Abel, M.H. Sewell, J.* (1999). Stress and burnout in rural and urban secondary school teacher. *Journal of Educational Research.* 92(5): 23-35.

Alvarez, 2020 – *Alvarez, A.V.* (2020). The phenomenon of learning at a distance through emergency remote teaching amidst the pandemic crisis. *Asian Journal of Distance Education.* 15(1): 144-153.

Aveginou, Moros, 2020 – *Aveginou, M.D., Moros, S.E.* (2020). The 5-phase process as a balancing act during times of disruption: Transitioning to virtual teaching at an international JK-5 school. Teaching, Technology, and Teacher Education during the COVID-19 Pandemic: Stories from the Field. Association for the Advancement of Computing in Education (AACE), P. 583-594.

Besser et al., 2020 – *Besser, A., Lotem, S., Zeigler-Hill, V.* (2020). Psychological stress and vocal symptoms among university professors in Israel: Implications of the shift to online synchronous teaching during the COVID-19 pandemic. *Journal of Voice.* DOI: 10.1016/j.jvoice.2020.05.028

Cook, 1978 – *Cook, D.H.* (1978). Teacher morale: Symptoms, diagnosis, and prescription. *The Clearinghouse.* 52: 355-358.

Çifçi, Demir, 2020 – *Çifçi, F., Demir, A.* (2020). The effect of home-based exercise on anxiety and mental well-being levels of teachers and pre-service teachers in COVID-19 pandemic. *African Educational Research Journal.* 8(2): 20-28. DOI: https://doi. org/10.30918/AERJ.8S2.20.029.

Dedrick et al., 1981 – *Dedrick, C. Y., Hawkes, R.R., Smith, J.K.* (1981). Teacher stress: A descriptive study ofthe concerns. The National Association of Secondary School Principals Bulletin, 31-35.

Dorn et al., 2020 – *Dorn, E., Hancock, B., Sarakatsannis, J., Viruleg, E.* (2020). COVID-19 and student learning in the United States: The hurt could last a lifetime. McKinsey & Company.

Finlay-Jones, 1986 – *Finlay-Jones, R.* (1986). Factors in the teaching environment associated with severe psychological distress among school teachers. *Australian and New Zealand Journal of Psychiatry.* 20: 304-313. DOI: 10.3109/00048678609158878

Guglielmi Tatrow, 1998 – *Guglielmi, R.S., Tatrow, K.* (1998). Occupational Stress, Burnout, and Health in Teachers: A Methodological and Theoretical Analysis. *Review of Educational Research*. 68(1): 61-99.

Haberman, 2004 – *Haberman, M.* (2004). Teacher Burnout in Black and White. University of Wisconsin Milwaukee, the Haberman Educational Foundation.

Hadar et al., 2020 – *Hadar, L.L., Ergas, O., Alpert, B., Ariav, T.* (2020). Rethinking teacher education in a VUCA world: student teachers' social-emotional competencies during the Covid-19 crisis. *European Journal of Teacher Education*. DOI: 10.1080/02619768.2020.1807513.

Harding et al., 2019 – *Harding, S., Morris, R., Gunnell, D., Ford, T., Hollingworth, W., Tilling, K., Kidger, J.* (2019). Is teachers' mental health and wellbeing associated with students' mental health and wellbeing? *Journal of affective disorders*. 242: 180-187.

Hastings, Bham, 2003 – *Hastings, R.P., Bham, M.S.* (2003). The relationship between student behaviour patterns and teacher burnout. *School Psychology International*. 24(1): 115-127. DOI: https://doi.org/10.1177/0143034303024001905

Holmes et al., 2020 – *Holmes, E.A., O'Connor, R.C., Perry, V.H., Tracey, I., Wessely, S., Arseneault, L., Bullmore, E.* (2020). Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *The Lancet Psychiatry*. 7(6): 547-560.

Ingersoll, 2001 – *Ingersoll, R.M.* (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal*. 38: 499-534. DOI: 10.3102/00028312038003499

Kaiser, Polczynski, 1982 – *Kaiser, J.S., Polczynski, J.J.* (1982). Educational stress: Sources, reactions, preventions. *Peabody Journal of Education*. 59.

Konstantinovskiy i dr., 2019 – *Konstantinovskiy, D.L., Pinskaya, M.A., Zvyagintsev, R.S.* (2019). Professional'naya samootsenka uchiteley: ot entuziazma k istoshcheniyu [Professional self-assessment of teachers: from enthusiasm to exhaustion]. *Sotsis*. 5: 14-25. [in Russian]

Kokkinen et al., 2014 – *Kokkinen, L., Kouvonen, A., Koskinen, A., Varje, P., Väänänen, A.* (2014) Differences in Hospitalizations between Employment Industries, Finland 1976 to 2010. *Annals of Epidemiology*. 24(8): 598-605.

Klapproth et al., 2020 – *Klapproth, F., Federkeil, L., Heinschke, F., Jungmann, T.* (2020). Teachers' Experiences of Stress and Their Coping Strategies during COVID-19 Induced Distance Teaching. *Journal of Pedagogical Research*. 4(4): 444-452.

Košir et al., 2020 – *Košir, K., Dugonik, S., Huskić, A., Gračner, J., Kokol, Z., Krajnc, Z.* (2020). Predictors of perceived teachers' and school counselors' work stress in the transition period of online education in schools during the COVID-19 pandemic. DOI: 10.31234/osf.io/gj3e5

Lee, 2020 – *Lee, J.* (2020). Mental health effects of school closures during COVID-19. *The Lancet Child & Adolescent Health*. 4(6): 421.

MacIntyre et al., 2020 – *MacIntyre, P.D., Gregersen, T., Mercer, S.* (2020). Language teachers' coping strategies during the Covid-19 conversion to online teaching: Correlations with stress, wellbeing and negative emotions. *System*. 94: 102352.

Oducado et al., 2021 – *Oducado, R.M., Rabacal, J., Moralista, J. Tamdang, K.* (2021). Perceived stress due to COVID-19 pandemic among employed professional teachers. *International Journal of Educational Research and Innovation*. (15): 305-316.

Pajarianto et al., 2020 – *Pajarianto, H., Kadir, A., Galugu, N., Sari, P., Februanti, S.* (2020). Study from home in the middle of the COVID-19 pandemic: Analysis of religiosity, teacher, and parents support against academic stress. *Talent Development & Excellence*. 12(2): 1791-1807.

Petrakova et al., 2021 – *Petrakova, A.V., Kanonir, T.N., Kulikova, A.A., Orel, E.A.* (2021) Features of psychological stress among teachers in the conditions of distance teaching during the COVID‑19 pandemic. Education issues. *Educational Studies Moscow*. 1: 93-114. DOI: https://doi.org/1 0.17323/1814-9545-2021-1-93-114

Pressley et al., 2021 – *Pressley, T., Ha, C., Learn, E.* (2021). Teacher stress and anxiety during COVID-19: An empirical study. *School psychology*. 36(5): 367.

Purwanto et al., 2020 – *Purwanto, A., Asbari, M., Fahlevi, M., Mufid, A., Agistiawati, E., Cahyono, Y., Suryani, P.* (2020). Impact of work from home (WFH) on Indonesian teachers' performance during the Covid-19 pandemic: An exploratory study. *International Journal of Advanced Science and Technology*. 29(5): 6235-6244.

Ramakanta, Sonali, 2020 – *Ramakanta, M., Sonali, S.E.* (2020). Readiness and Perception of Student Teachers' Towards Online Learning in the Midst of COVID-19 Pandemic (August 4, 2020). DOI: http://dx.doi.org/10.2139/ssrn.3666914

Schonfeld et al., 2010 – *Schonfeld, I.S., Farrell, E., Ganster, D.C., Perrewé, P.L.* (2010). Qualitative Methods Can Enrich Quantitative Research on Occupational Stress: An Example from One Occupational Group. New Developments in Theoretical and Conceptual Approaches to Job Stress, vol. 8, pp. 137-197.

Schonfeld, Santiago, 1994 – *Schonfeld, I.S., Santiago, E.A.* (1994). Working conditions and psychological distress in firstyear women teachers: Qualitative findings. In L. C. Blackman (Ed.), what works? Synthesizing effective biomedical and psychosocial strategies for healthy families in the 21st century (pp. 114–121). Indianapolis, IN: University of Indiana Press.

Shah et al., 2020 – *Shah, K., Mann, S., Singh, R., Bangar, R., Kulkarni, R.* (2020). Impact of COVID-19 on the Mental Health of Children and Adolescents. *Cureus*. 12(8).

Shirom et al., 2009 – *Shirom, A., Oliver, A., Stein, E.* (2009). Teachers' stressors and strains: A longitudinal study of their relationships. *International Journal of Stress Management*. 16: 312-332. DOI: 10.1037/a0016842

Shubhra, 2016 – *Shubhra Ojh* (2016). Comparative study of burnout of rural and urban primary teachers of Varanasi. *International Journal of Advanced Research*. 4(3): 1239-1242.

Spinelli et al., 2020 – *Spinelli, M., Lionetti, F., Pastore M., Fasolo, M.* (2020). Parents' Stress and Children's Psychological Problems in Families Facing the COVID-19 Outbreak in Italy. *Frontiers in Psychology*. 11: 1713-1720.

Steiner-Khamsi, Teleshaliyev, 2020 – *Steiner-Khamsi, G., Teleshaliyev, N.* (2020). Ten-plus-one ways of coping with teacher shortage in Kyrgyzstan. *Globalization on the Margins: Education and Post-Socialist Transformations in Central Asia*. 315.

Talidong, Toquero, 2020 – *Talidong, K.J., Toquero, C.M.* (2020). Philippine teachers' practices to deal with anxiety amid COVID-19. *Journal of Loss and Trauma*. 25(6-7): 573-579.

Trentham, Blackburn, 1980 – *Trentham, L., Blackburn, J.* (1980). Rural teachers and teacher education. *Eastern Education Journal*. 14: 19-23.

UNESCO, 2021 – UNESCO. The impact of the COVID-19 pandemic on student voice: findings and recommendations, 2021. [Electronic resource]. URL: https://unesdoc.unesco.org /ark:/48223/pf0000379269

UNICEF, 2020 – UNICEF. Childcare in a global crisis: the impact of COVID-19 on work and family life. [Electronic resource]. URL: https://www.unicef-irc.org/article/2027-40-million-children-miss-out-on-early-education-in-critical-pre-school-year-due-to.html

Watermeyer et al., 2020 – *Watermeyer, R., Crick, T., Knight, C., Goodall, J.* (2020). COVID-19 and digital disruption in UK universities: Afflictions and affordances of emergency online migration. *Higher Education*. DOI: 10.1007/s10734-020-00561-y

Zeeshan et al., 2020 – *Zeeshan, M., Ghafoor, A., Khan, Sh.E.* (2020). Pandemic Preparedness and Techno Stress among Faculty of DAIs in Covid-19. *Sir Syed Journal of Education & Social Research*. 3(2): 383-396.

Zhou, 2020 – *Zhou, X.* (2020). Managing Psychological Distress in Children and Adolescents Following the COVID-19 Epidemic: A Cooperative Approach. *Psychological Trauma: Theory, Research, Practice & Policy*. 12(1): 76-78.