THE IMPACT OF THE COVID-19 PANDEMIC ON THE SCHOOL PSYCHOSOCIAL CLIMATE

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Abstract
The year 2020 has seen major changes worldwide due to the Covid-19 pandemic caused by the SARS-CoV-2 virus. While performing their profession, physical education and sports teachers (and not only), faced different situations, behaviors and means of conducting the teaching process, compared to the pre-COVID-19 period. The aim of our research is to present the impact of the COVID-19 pandemic on students and teachers of physical education and sports in Bucharest, Romania. The research was conducted with the participation of teachers and students from 10 schools in Bucharest, between October 2020 and March 2021. 131 people took part in the study: 93 students (48 girls and 45 boys) and 38 physical and sports teachers (30 women and 8 men), aged between 12 and 61 years. The opinion questionnaire "The effects of the COVID-19 pandemic on the school psychosocial plan" was used, which includes 38 items. We used the T test for two independent samples to analyze student responses, as well as the Mann-Whitney (U) test to identify significant differences in teachers. The results revealed important aspects between the researched groups in terms of: the level of stress felt, the quality of working relationships, the characteristics of interpersonal communication and the degree of fatigue felt. The research provides valuable information to students, parents, teachers of physical education and sports (and not only), and can be an alarm signal about the necessary changes in schools, especially if the pandemic situation will continue for a considerable amount of time.

Keywords: *psychosocial climate, Covid-19 pandemic, physical education and sports teachers, students.*

Introduction

The importance and topicality of the research topic are considerably amplified by the context of the COVID - 19 pandemic and the changes brought in the lives of teachers, students, and their families, both psychologically and socially. When we talk about the relationship between students and physical activity, Hilger-Kolb et al. (2020) highlights the fact that students, when pressed for time, prefer to give up doing physical activity and classes in physical education and sports in schools, this subject being the first to be set aside, not realizing its importance.

Ng et al. (2021) highlights the rapid and unexpected changes in education systems (due to the pandemic) that have been felt in individuals by: increased anxiety, stress, students' lack of motivation, their desire to return to school and appreciation of face-to-face interaction more than they used to do before - even if the eLearning resources were numerous and varied. Also, a recent study by Tang et al. (2021) on a sample of 4342 individuals from high schools in Shanghai, claims that the 3 most common symptoms were: anxiety, stress and depression. Sport, physical activity (which in the context of the development of society gained importance - see Kudláček et al., 2019) were also affected during the pandemic, and coping strategies used, for example, by athletes,have not always been the ones with long-term benefits - this refers to maladaptive coping strategies such as substance use (alcohol, medication), emotional discharge or denial (see Makarowski et al., 2020). It becomes all the more important for teachers to learn to

analyze (and explain) certain behaviors, student reactions, or situations during the pandemic (for techniques to promote effective, adaptive behaviors, see Pelin et al., 2018). In the case of teachers, the studies highlight the existence of a favorable attitude towards online communication and teaching. Jogezai et al. (2021) argue that distance learning, through social networks and applications, has had a positive impact on teachers' computer skills, as they learn and make more use of eLearning to make their hours as engaging and creative as possible. It also mentions a much higher level of openness from teachers to these means, compared to the pre-pandemic period.

School (along with family) is a primary educational factor, whose purpose is to facilitate the learning and internalization by young people of the rules of conduct recognized in society. School learning is not reduced to a simple cognitive interaction between transmitter and receiver, but encompasses an entire "social field", including: all types of interactions between the actors involved (teachers, students, administrative staff, etc.); institutional rules and regulations; traditions and customs. The school can be analyzed as an independent social organization, the emphasis being on the function of socialization, of transmitting the values promoted by society. The school can be seen as a mini-society, the school community, as a social group, having 3 levels: the community of teachers, students and parents (Mitrache et al., 2018). The school develops the child's autonomy, "emphasizes the socializing effect of the group of friends and reduces the influence of the family" (Schifirneț, 2002). The closure of schools during March-July 2020 (in the context of the COVID-19 pandemic) was a measure that strongly shook the Romanian education system. Many students (but also teachers) had difficulties in terms of access to the Internet and / or electricity, and there were many cases in which there was no access to an electronic device that would make it possible to communicate and carry out the instructional-educational process.

At the same time, some contents of the school curriculum were very difficult to adapt to the needs of online education. Physical education teachers (responsible, among other things, for informing children about the positive effects of physical activity - see, for example, Pelin et al., 2020) have had to work for a long time in online format - a real challenge for all practical disciplines. On 19 November 2020, UNICEF issued a report to the general public claiming that the current pandemic had serious consequences for children, with the risk of causing irreversible damage to their education and nutrition and well-being. According to the report (UNICEF, 2020), the closure of schools nationwide in 30 countries affects 572 million students, or 33% of all students worldwide. To combat this, UNICEF is urging governments and their global partners to ensure access to education by eliminating the digital "disproportion". Thus, Romania has implemented various programs, offering disadvantaged students laptops and tablets that they used at school, but also allocating funds for the modernization and equipment of schools and classrooms so that they are in accordance with the requirements of the current situation (video projectors , computers, internet connection, smart boards, thermal scanners, fast COVID-19 tests, etc.).

The psychosocial climate refers to the mental, emotional state, to the state of mind of a group, the attitude that dominates chronically or temporarily among the subjects, reflected by values such as: optimum, degree of mobilization, courage, etc. (Jude, 2003). Researchers have shown that organizational climate influences work engagement (Hicklenton et al., 2019), job satisfaction (Spanjol et al., 2015), employee behaviors and attitudes (Tilleman, 2012), and organizational identification (Afsar et al. ., 2018). The psychosocial climate in the school environment refers to the level of cohesion found in the school community, to the degree of satisfaction or dissatisfaction, to the level of motivation and mobilization of human resources. The COVID-19 pandemic has affected all occupational categories, including physical education and sports teachers, and resilience and the ability to cope with stress

during this period are essential. (Piotrowski et al., 2021).

The aim of the study is to present the impact of the COVID-19 pandemic on students and teachers of physical education and sports in Bucharest, Romania.

Hypotheses

1. There are significant differences between teachers of physical education and sports according to gender (female group vs. male group) in terms of the level of stress felt and the perceived quality of relationships with others.
2. There are significant differences between students who worked in the hybrid system and students who worked only in the online system, in terms of the level of stress felt.
3. There are significant differences between female and male students in terms of the level of stress and the degree of fatigue felt.

Materials and method

Participants

The research involved a total of 131 people: 93 students (48 girls and 45 boys) and 38 teachers of physical education and sports (30 women and 8 men), aged 12-15 (students), respectively 23-61 years (teachers) - Meanage = 36.5 years. The research was conducted with the participation of physical education and sports teachers and students from 10 schools in Bucharest, Romania.

Instruments

The opinion poll "Effects of the COVID-19 pandemic on the school psychosocial level", which included 38 items, was developed to identify the effects of the pandemic on students and teachers in Romania, the urban environment. The questionnaire investigated several areas, such as: stress and anxiety, fatigue / exhaustion, communication and relationships with others (family, friends, colleagues, boss) - see Constantinescu (2021). The first area was called stress and anxiety because there is a very close connection between the two psychic phenomena - when we are stressed we become more anxious and vice versa (see Predoiu, 2016).

The questionnaire included both closed questions (dichotomous or using a 4, 5 or 7 - step Likert scale), and open-ended questions to find out as much information as necessary for the study. Here are some examples of questions used to investigate the different areas mentioned: "From 1 to 5, where 1 means very little and 5 means a lot, how stressed do you feel during this time of learning?" (stress and anxiety area); "I'm starting to get worse and worse because of the tasks I have at school / work" (fatigue / exhaustion area); "Do you feel that work / class affects your relationships with family / friends?" (area relationships with others); "Do you feel that the communication process between you and your colleagues has diminished?" (communication area). The questionnaire also included questions about the extent to which the hours were conducted: online, mixed (both online and face-to-face) or face-to-face.

Procedure

The questionnaire was digitally prepared using the GoogleForms platform and sent to online participants between October 2020 and March 2021. The deadline for completion was 10 days. Physical education and sports teachers and students had the option to withdraw at any time from the research (all participants were informed at the beginning of the study that, at any time and for any reason, they may decide to withdraw from the study without having to suffer any penalties), the results were treated confidentially, and written informed consent was obtained. Please note that in the case of students, written informed consent was obtained from their parents before completing the questionnaire.

Results

As teaching-learning methods we considered only two, namely: the online method and the hybrid method (online teaching and learning, synchronous and asynchronous, combined with physical presence). The figure below (Figure 1) shows the share of the use of each method, depending on the participants.

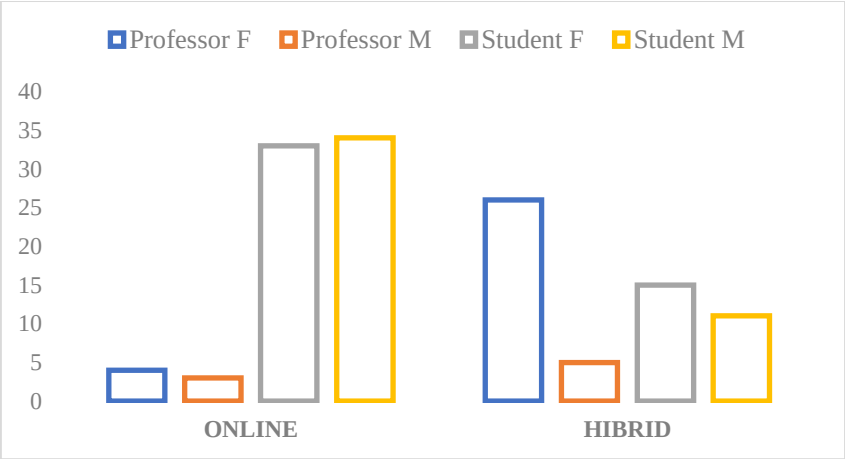

Figure 1. Teaching-learning methods

We investigated the existence of significant differences between the formed groups: "online activity" group vs. "hybrid activity" group, respectively "female" group vs. "male" group, in the case of physical education and sports teachers, through the non-parametric Mann-Whitney (U) test for two independent samples (see Predoiu, 2020). This statistical procedure was calculated using the "IBM SPSS statistics" program (version 20.0).

The effect size was calculated according to the formula $r = \sqrt{\frac{Z^2}{N}}$.

A.Stress and anxiety area

Table 1. Physical education and sports teachers results - female vs. male - Stress and anxiety area (descriptive statistics)

GROUP 1 - Men		**GROUP 2 - Women**	
Mean	24	Mean	32.46
Standard Error	3.05	Standard Error	1.92
Median	23	Median	32
Mode	23	Mode	32
Standard deviation	8.65	Standard deviation	10.53
Kurtosis	-0.47	Kurtosis	0.73
Skewness	0.58	Skewness	0.71

Table 2. Physical education and sports teachers results - online activity vs. hybrid activity – area Stress and anxiety (descriptive statistics)

GROUP 1 - Online		**GROUP 2 - Hybrid**	
Mean	25.71	Mean	31.80
Standard Error	3.81	Standard Error	1.90
Median	31	Median	32
Mode	32	Mode	29
Standard deviation	10.09	Standard deviation	10.60
Kurtosis	-2.12	Kurtosis	0.69
Skewness	-0.11	Skewness	0.83

Table 3. Results for physical education and sports teachers - female vs. female male, respectively online activity vs. hybrid activity - Stress and anxiety area (Test Mann-Whitney U)

Stress and anxiety PE TEACHERS	N	Median	Z	Mann-Whitney test	p	r
Men	8	23	-2.062	62.50	0.034	0.70
Women	30	32				
Online	7	31	-1.226	76	0.231	-
Hybrid	31	32				
Total (professors)	38					

The value of the Mann-Whitney Test, in the case of the comparison between physical education and sports teachers, male group vs. the female group, in terms of the level of stress felt, is 62.50. Since p = 0.034, we can conclude that between the male group (Median = 23) and the female group (Median = 32) there are significant differences, statistically, in terms of the level of stress felt. The effect size is r = 0.70, which shows that there is a strong to very strong difference between the results, in the case of Stress and Anxiety, between female physical education teachers and male teachers.

Also, in the comparison of online activities group vs. group of hybrid activities, the value of the U test is 76. Since the significance threshold is 0.231, we can conclude that there are no significant differences between the two groups under investigation (physical education teachers who worked only online and teachers who worked in mixed mode / hybrid) on the area Stress and anxiety.

B. Area Fatigue / exhaustion

Table 4. Results for physical education and sports teachers - female vs. male - Fatigue / exhaustion area (descriptive statistic)

GROUP 1 - Men		GROUP 2 - Women	
Mean	7.62	Mean	9.73
Standard Error	1.46	Standard Error	0.52
Median	6.5	Median	9
Mode	7	Mode	8
Standard deviation	4.13	Standard deviation	2.87
Kurtosis	0.01	Kurtosis	-0.78
Skewness	1.17	Skewness	0.17

Table 5. Physical education and sports teachers results - online activity vs. hybrid activity - area Fatigue / exhaustion (descriptive statistic)

GROUP 1 - Online		GROUP 2 - Hybrid	
Mean	9.14	Mean	9.32
Standard Error	1.51	Standard Error	0.55
Median	10	Median	8
Mode	10	Mode	8
Standard deviation	4.01	Standard deviation	3.11
Kurtosis	-0.66	Kurtosis	-1.06
Skewness	-0.16	Skewness	0.35

Table 6. Results for physical education and sports teachers - female vs. male, respectively online activity vs. hybrid activity - area Fatigue / exhaustion (Mann- Whitney U Test)

Fatigue/exhaustion PE TEACHERS	N	Median	Z	Mann-Whitney test	p
Men	8	6.5	-1.853	68.0	0.064
Women	30	9			
Online	7	10	-0.719	89.50	0.483
Hybrid	31	8			
Total (professors)	38				

The results in Table 6 show that there are no statistically significant differences in the area of Fatigue / Exhaustion between the groups of physical education and sports teachers investigated.

C. Communication Area

Table 7. Results of physical education and sports teachers - female vs.male - Communication area (descriptive statistics)

GROUP 1 - Men		GROUP 2 - Women	
Mean	3.75	Mean	4.16
Standard Error	0.31	Standard Error	0.15
Median	3.5	Median	4
Mode	3	Mode	4
Standard deviation	0.88	Standard deviation	0.83
Kurtosis	-1.48	Kurtosis	-0.08
Skewness	0.61	Skewness	-0.71

Table 8. Physical education and sports teachers results - online activity vs. hybrid activity - Communication area (descriptive statistics)

GROUP 1 - Online		GROUP 2 - Hybrid	
Mean	3.71	Mean	4.16
Standard Error	0.35	Standard Error	0.14
Median	3	Median	4
Mode	3	Mode	4
Standard deviation	0.95	Standard deviation	0.82
Kurtosis	-1.68	Kurtosis	-0.012
Skewness	0.76	Skewness	-0.70

Table 9. Results for physical education and sports teachers - female vs. male, respectively online activity vs. hybrid activity - Communication area (Mann-Whitney U Test)

Communication PE TEACHERS	N	Median	Z	Mann-Whitney test	p
Men	8	3.5	-1.292	86	0.235
Women	30	4			
Online	7	3	-1.279	76.5	0.234
Hybrid	31	4			
Total (professors)	38				

The results in Table 9 show that there are no significant differences in the area of Communication between the groups of physical education and sports teachers investigated (men vs. women, respectively online teaching group vs. hybrid teaching group).

D.Area Relationships with others

Table 10. Results of physical education and sports teachers - female vs. male - Relationship with others (descriptive statisticS)

GROUP 1 - Men		**GROUP 2 - Women**	
Mean	5.25	Mean	8.4
Standard Error	0.52	Standard Error	0.49
Median	5	Median	8
Mode	4	Mode	8
Standard deviation	1.48	Standard deviation	2.68
Kurtosis	0.26	Kurtosis	0.12
Skewness	1.17	Skewness	0.01

Table 11. Physical education and sports teachers results - online activity vs. hybrid activity - Relationships with others (descriptive statistics)

GROUP 1 - Online		**GROUP 2 - Hybrid**	
Mean	7.28	Mean	7.83
Standard Error	0.77	Standard Error	0.52
Median	8	Median	8
Mode	9	Mode	8
Standard deviation	2.058	Standard deviation	2.94
Kurtosis	-0.98	Kurtosis	-0.50
Skewness	-0.85	Skewness	0.27

Table 12. Results for physical education and sports teachers - female vs. male, respectively online activity vs. hybrid activity - the area Relationships with others (Mann-Whitney U Test)

Relationships with others PE TEACHERS	**N**	**Median**	**Z**	**Mann-Whitney test**	**p**	**r**
Men	8	5	-2.999	37	0.002	1.10
Women	30	8				
Online	7	8	-0.095	106	0.941	-
Hybrid	31	8				
Total (professors)	38					

The value of the Mann-Whitney Test in the comparison between physical education and sports teachers - male group vs. the female group, in terms of the quality of relationships with others, is 37. Since p = 0.002, there are significant differences between the male group (Median = 5) and the female group (Median = 8), regarding the perceived quality of the relationships with those around. The effect size is r = 1.10. There is therefore a very strong difference between the results, in the case of the area *Relationships with those around*, between female physical education teachers and male teachers.

Please note that there are no significant differences (p> 0.05) between physical education teachers who worked online and teachers who worked in a mixed / hybrid regime, in the area of Relations with others. Next, through the T test for independent samples we checked if there are significant

differences between the groups of students: "online activity" group vs. "hybrid activity" group, respectively "female" group vs. "male" group. The conditions for applying the T-Test for two independent samples are met (see Predoiu, 2021): the dependent variables are normally distributed (the skewness coefficient in absolute value is less than 1); the homogeneity of the variances is ensured (in the case of the test Levene, $p > 0.05$).

Table 13. "Online" versus "hybrid" group results - descriptive statistics (students)

	Group	N	Mean	Std. Deviation	Std. Error
Stres and anxiety	online	67	34.01	9.04	1.10
	hybrid	26	38.65	9.84	1.93
Fatigue / Exhaustion	online	67	11.19	2.97	0.36
	hybrid	26	12.15	3.02	0.59
Communication	online	67	4.00	0.83	0.10
	hybrid	26	4.00	0.93	0.18
Relationships with those around	online	67	8.23	2.53	0.30
	hybrid	26	8.11	2.59	0.50

Table 14. Rezultate grup "online" vs. "hibrid" (elevi) - t test

Variables	t	df	p	g	Confidence interval	
					inferior	superior
Stres and anxiety	-2.165	91	0.033	0.50	-8.89	-0.38
Fatigue / Exhaustion	-1.389	91	0.168	0.32	-2.33	0.41
Communication	0	91	1	0	-0.19	0.39
Relationships with others	0.20	91	0.83	0.04	-1.04	1.29

The analysis of the results obtained for the 4 investigated areas highlights:
- there are statistically significant differences ($p < 0.05$) between the "online" group and the "hybrid" group, in the case of students, in the area of Stress and Anxiety; the arithmetic mean for the group performing the hybrid activity is significantly higher ($M = 38.6$) than the average for the group performing the activity "online" ($M = 34$), in the case of students;
- the effect size index (Hedges's g) = 0.50 shows a moderate difference between the results of the activity carried out in the hybrid version and the results obtained by the group of students with exclusively online activity, in terms of Stress and anxiety.
- within the other areas analyzed there are no significant differences between the 'online' group and the 'hybrid' group.

Table 15. "Male" versus "female" group results (students) - descriptive statistics

	Group	N	Mean	Std. Deviation	Std. Error
Stres and anxiety	M	45	32.97	9.58	1.42
	F	48	37.50	8.87	1.28
Fatigue / Exhaustion	M	45	10.33	3.03	0.45
	F	48	12.52	2.59	0.37
Communication	M	45	3.93	0.88	0.13
	F	48	4.06	0.83	0.12

Relationships with others	M	45	7.82	2.67	0.39
	F	48	8.56	2.37	0.34

Table 16. "Male" versus "female" group results (students) - T test

Variabile	t	df	p	g	Confidence interval	
					inferior	superior
Stres and anxiety	-3.74	91	0.0003	0.77	-3.34	-1.02
Fatigue / Exhaustion	-2.36	91	0.02	0.48	-8.32	-0.71
Communication	-0.72	91	0.42	0.20	-0.48	0.22
Relationships with others	-1.41	91	0.16	0.29	-1.78	0.30

The analysis of the results obtained for the 4 areas of the questionnaire highlights:

- there are significant differences ($p < 0.05$) between the “male” group and the “female” group, in the case of students, in the area of Stress and Anxiety; the arithmetic mean for the "male" group is significantly lower (M = 32.97) than the average for the "female" group (M = 37.50);

- the size index of the effect g (of Hedge) = 0.77 shows a strong difference between the results obtained by the group of female students and the results obtained by the group of male students, regarding the area Stress and anxiety.

- there are also significant differences between the 'male' group and the 'female' group, in the case of students, in the area of Fatigue / exhaustion; the arithmetic mean for the "male" group is significantly lower (M = 10.33) than the average for the "female" group (M = 12.52);

- the effect size index g = 0.48 shows a moderate difference between the results obtained by male and female students, in the case of the area Fatigue / exhaustion.

- in the case of the other areas analyzed, there are no significant differences between the 'female' group and the 'male' group.

Conclusion

The COVID-19 pandemic has brought important changes to the school psychosocial level, affecting both students and teachers of physical education and sports. The school psychosocial climate can have various effects on the mental, physical and emotional level. The analysis of the data obtained reveals the existence of significant differences between male and female physical education and sports teachers, in terms of the level of stress felt and the perceived quality of relationships with others. Female physical education and sports teachers experienced a significantly higher level of stress during the COVID-19 pandemic and found that relationships with others were significantly more affected compared to male physical education and sports teachers. As for the students, those who worked in the hybrid system felt a significantly higher level of stress, unlike the students who worked only in the online system. At the same time, female students experienced a significantly higher level of stress during the COVID-19 pandemic and reported a significantly higher level of fatigue compared to male students.

Conducted research can be a wake-up call to the necessary interventions at the level of schools, especially if the pandemic situation will continue for a long time to come. The study was limited to the investigated sample, with students and teachers of physical education and sports coming only from urban areas.

Authors' Contributions

All authors have equally contributed to this study.

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