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Monika Piątkowska (Corresponding author)
Józef Piłsudski University of Physical Education in Warsaw, Poland

Elżbieta Biernat
Warsaw School of Economics, Poland

Physical Activity Might be the Protective Factor for Psychopathological Symptoms of Polish Female Teachers

Abstract

The paper aimed to analyse the level of depression, anxiety and stress of female teachers and determine its association with the subjects' psychosocial, sociodemographic, and lifestyle characteristics. A survey based on Depression Anxiety Stress Scale and International Physical Activity Questionnaire was carried out. Among teachers, 27.3% reported moderate or higher overall levels of negative emotional symptoms. Teachers with low physical activity level (PAL) were likelier to report higher levels of depression, anxiety, and stress than those with moderate or high PAL. The study indicates the importance of PA interventions for maintaining mental health in this group.

Keywords: *depression, anxiety, stress, physical activity, teachers*

Introduction

Job burnout is a psychological syndrome that involves a prolonged response to chronic interpersonal stressors on the job (Maslach & Leiter, 2017). It most often affects helping professions that involve intense contact with people, a stressful workplace and experiencing chronic emotional strain. The teaching profession is one of the most stressful and depressing (Zurlo et al., 2016) in various countries (Lopez et al., 2006). In Poland, 25% have a low sense of meaning at work, and 20% have full symptoms of burnout syndrome (Okulicz-Kozaryn et al., 2012). One component of occupational burnout is exhaustion, the physical and emotional

response to stress (Maslach & Leiter, 2017). Symptoms of the physical response may include, e.g., a predominant sense of fatigue, sleep problems, appetite disturbance with weight loss, and neglect of physical activity (PA). Despite the evidence showing that regular exercise reduces the risk of mental illness symptoms (Biernat et al., 2022) – through, e.g., changing habits, stabilising hormone production and lowering blood pressure (Gerber & Pühse, 2009) – in a group of Polish teachers PA is not too high (Rottermund et al., 2014).

Our previous experience has shown that health and illness depend on many factors at different levels and on the interaction between them (Biernat et al., 2020). Relatively little is known about the association of single factors of psychological disorders, such as stress, with teachers' lifestyle risk factors (e.g., prolonged sitting, lack of or too little PA).

Research Context

This study aims to analyse the levels of depression (D), anxiety (A), and stress (S) of teachers and to determine the association of the prevalence of moderate, severe or extremely severe symptoms of these disorders with selected factors: psychosocial, sociodemographic and lifestyle characteristics of the subjects. Therefore, we have formulated the following hypotheses (H): There is a statistically significant relationship between the prevalence of moderate, severe or extremely severe symptoms of D (H1), A (H2, S (H3), and DAS (H4) with selected factors: psychosocial, sociodemographic and lifestyle characteristics of female teachers.

It is the first study in Poland to address this topic before the COVID-19 pandemic and the second one we have developed (Biernat et al., 2022).

Considering the negative consequences of teachers' mental health problems (Grzegorzewska, 2018), extensive knowledge of the most relevant risk and protective factors is essential. This knowledge will allow for management (corrective actions). It is all the more important because the COVID-19 pandemic has further compounded this professional group's mental health problem (Ozamiz-Etxebarria et al., 2021).

Research Methodology

A survey-based study of 88 female teachers of 8 randomly selected secondary schools in Katowice (Poland) was completed in June 2019. The interviews with

randomly appointed teachers were conducted in their workplace, with the prior consent of the head teacher (Table 1).

Table 1. Sociodemographic characteristics of teachers (n = 88)

Variables	n	%
Age		
<35 years	11	7.2
35-50 years	48	31.6
>50 years	29	19.1
Work experience		
≤20 years	51	56.0
>20 years	37	44.0
Time employment		
0.5 full-time employment	22	25.0
full-time employment	66	75.0
Total lessons per week		
≤18 h/week	73	83.0
>18 h/week	15	17.0
School subject		
Humanities	51	58.0
Mathematics and natural sciences	8	9.1
Physical education	29	32.9
Steady income		
≤2700 PLN	57	64.8
>2700 PLN	31	35.2

The questionnaire consisted of: the 21-item Depression Anxiety Stress Scale (DASS-21) (Makara-Studzińska et al., 2022) and the Polish short version of the International Physical Activity Questionnaire (IPAQ-SF) (Biernat et al., 2007). Moreover, questions on age and psychosocial factors describing the respondents' work environment (work experience, time-employment, total lessons per week, taught school subjects, steady income) were asked.

The culturally adapted and validated short version of DASS-21 was used to assess the frequency and severity of DAS. The internal consistency of the Polish version of DASS-21 had Cronbach's alpha values of 0.86, 0.84 and 0.85 for DAS subscales, respectively (Makara-Studzińska et al., 2022). The frequency of symptoms over the past week was rated on a four-point Likert scale, ranging from 0 (none) to 3 (very often/most of the time). The total score for each subscale was

calculated, and severity was categorised as normal, mild, moderate, or severe to very severe (P.F. Lovibond & S.H. Lovibond, 1995).

IPAQ-SF was used to collect data on PA frequency, duration, intensity, and weekly sitting time during the last 7 days. Weekly energy expenditure of total PA (EETPA) was calculated by multiplying a MET number attributed to it [vigorous (VPA) – 8.0 METs, moderate (MPA) – 4.0 METs, walking – 3.3 METs] by the number of days of practising it per week and time of duration in min/day. Subjects were classified into two physical activity levels (PAL): low with EETPA<600 MET-min/week and moderate or high with EETPA≥600 MET-min/week.

Total weekly sitting time was dichotomised into ≤7.5h>7.5h/day to study high vs low sitting. Sitting more than 7h/day increases the adults' risk of all-cause mortality (Loyen et al., 2016).

Data codification, processing and analysis were completed using IBM® SPSS® Statistics ver. 26. We analysed the associations of PA and other psychosocial factors with DAS symptoms using a binary logistic regression (with DASS symptoms as the dependent variable). The assessment of the relationships was based on the odds ratio (OR) and confidence interval (CI) for OR. The level of statistical significance was set at α=.05.

The study was approved by the Bioethics Committee of the Jerzy Kukuczka Academy of Physical Education in Katowice (KB/24/2019; approval 10.06.2019).

Results

Among teachers, 27.3% reported moderate or higher overall levels of negative emotional symptoms. The prevalence of moderately to extremely severe levels of symptoms of DAS in teachers was 18.2, 25, and 58%, respectively (Table 2). The subjects' mean values for depression and anxiety were at a normal level (M=8.3±7.0 pts.; M=7.2±6.6 pts.), and the mean for stress was at a moderate level (M=20.5±6.9 pts.) (Table 2).

The mean values of EETPA were 1058.2±894.2 MET-min/week. Up to 37.5% of the respondents reported a low PAL. In the case of VPA, MPA, and LPA, the mean values of EE amounted to 590.5±946.7, 435.8±417.5 and 601.5±453.7MET-min/week, respectively (Table 2).

On average, Polish teachers sat 382.5 min/day (Me=360.0±=142.5). Whereby 27.3% were sitting more than 7.5 h/day.

Table 2. Characteristics of psychological state, sedentary behaviour and PA of teachers

Variables	n	M	SD	Me
Mental state				
DS (pts.)	88	8.3	7.0	6.0
AS (pts.)	88	7.2	6.6	5.0
SS (pts.)	88	20.5	6.9	20.0
Total DASS (pts.)	88	72.0	33.8	60.0
PA and sedentary behaviour				
FVPA (day/week)	21	2.5	1.4	2.0
TVPA (min/day)	21	30.7	42.6	10.0
EEVPA (MET-min/week)	21	590.5	946.7	240.0
FMPA (day/week)	62	2.7	1.8	2.0
TMPA (min/day)	62	41.5	32.1	30.0
EEMPA (MET-min/week)	62	435.8	417.5	320.0
FLPA (day/week)	84	5.9	1.7	7.0
TLPA (min/day)	84	30.2	18.5	30.0
EELPA (MET-min/week)	84	601.5	453.7	462.0
EEPA (MET-min/week)	84	1058.2	894.2	825.0
Sitting (min/day)	88	382.5	142.5	360.0

DS=depression scale; AS=anxiety scale; SS=stress scale; FVPA=frequency of vigorous PA; TMPA=-time of vigorous PA; EEVPA=energy expenditure of vigorous PA; FMPA=frequency of moderate PA; TMPA=time of moderate PA; EEMPA = energy expenditure of moderate PA; FLPA=frequency of light PA; TLPA=time of light PA; EELPA=energy expenditure of light PA; EETPA=energy expenditure of total PA; M=mean; SD=standard deviation; Me=median.

Table 3 shows binary logistic regression results for mild or lower DAS among teachers. Depression was significantly associated with PAL and declared sitting time per day, partially confirming H1. Teachers who declared low PAL were 3.55 times more likely to report moderate, severe, or extremely severe symptoms of depression than those with moderate or high PAL[1]. Females who sit more than 7.5 h/day are 4.89 more likely to suffer from depression. Regarding anxiety and stress, the only significant factor was PAL, partially confirming H2 and H3. Subjects with low PAL had an odds ratio of 3.32 of reporting moderate, severe, or extremely

[1] Specific values of the odds ratio (OR) and confidence interval (CI) for OR are placed in Table 3.

severe symptoms of anxiety and 2.77 of stress. The analysis of the relationship between the total DASS score and all examined variables showed that teachers who declared low PAL were 3.32 times more likely to report higher levels of negative emotional symptoms than teachers with moderate or high PAL. Moreover, subjects who work more than 18 h/week had an odds ratio of 6.44 of reporting negative emotional symptoms. Therefore, H4 is partially confirmed.

Table 3. Binary logistic regression for mild or lower DAS among teachers

Variables	Depression OR (95% CI)	Anxiety OR (95% CI)	Stress OR (95% CI)	Total DASS OR (95% CI)
Age				
<35 years				
35-50 years	2.14 (0.24-18.9)	0.73 (0.16-3.24)	1.86 (0.5-6.92)	1.7 (0.33-8.88)
>50 years	3.0 (0.32-28.4)	1.18 (0.25-5.68)	1.64 (0.4-6.76)	2.0 (0.35-11.44)
Work experience				
≤20 years				
>20 years	2.02 (0.68-6.04)	0.73 (0.27-1.97)	0.92 (0.39-2.16)	0.6 (0.23-1.61)
Time employment				
0.5 full-time employment				
full-time employment	1.55 (0.4-6.06)	1.18 (0.38-3.69)	0.94 (0.35-2.5)	1.96 (0.59-6.52)
Total lessons per week				
≤18 h/week				
>18 h/week	1.54 (0.31-7.63)	2.45 (0.51-11.85)	1.73 (0.57-5.3)	**6.44 (0.8-52.0)***
School subject				
Humanities				
Mathematics and natural sciences	2.05 (0.67-6.21)	1.31 (0.48-3.6)	2.14 (0.82-5.58)	1.08 (0.4-2.91)
Physical education	0.3 (0.02-5.73)	0.17 (0.0-3.11)	1.6 (0.35-7.42)	1.14 (0.0-2.56)
Steady income				
≤2100 PLN				
>2700 PLN	1.8 (0.53-6.15)	1.63 (0.56-4.7)	1.83 (0.75-4.43)	1.46 (0.53-4.02)
PAL				
High or moderate				
Low	**3.55 (1.15-10.96)***	**3.32 (1.22-9.02)***	**2.77 (1.09-7.02)***	**3.32 (1.25-8.77)***
Sitting				
≤7.5h				
>7.5h	**4.89 (1.56-15.27)***	0.73 (0.24-2.25)	1.66 (0.62-4.42)	2.55 (0.93-6.97)

Notes: * statistically significant $p<0.05$.

Discussion

Our results show that 27.3% of Polish secondary school teachers had moderate or severe overall negative emotional symptoms. For single factors, moderate or very severe levels of DAS were reported in 18.2, 25, and 58%, respectively. Previous Polish studies have sounded the alarm that single factors of mental disorders: stress and fear have a negative impact on teachers' health and the effectiveness of their work (Grzegorzewska, 2018). Considering the frequent co-occurrence and amplification of these factors (Domagalska et al., 2021; Yuziani & Maulina, 2018), the mental health problem in this group is even greater.

Global pre-pandemic reports confirmed significant mental health problems in elementary school teachers (Abdullah & Ismail, 2019), high schools (Betoret, 2009), and academics (Puertas-Molero et al., 2018). According to a review of international studies (Silva et al., 2021), high rates of DAS were reported in 19, 17, and 30% of teachers, respectively. According to other reports, depressive symptoms were shown in 19.4% (UK) – 50.3% (Brazil) (Carlotto & Câmara, 2015; Kidger et al., 2016). High level of stress was the problem among 20–66% of teachers (Moy et al., 2014). In Poland, depressive behaviours were reported by 22.8%, much more often by women than men and teachers with type D personality (experiencing negative emotions: depression, anxiety, anger, or hostility – 52%) (Domagalska et al., 2021).

Recent studies conducted during the COVID-19 pandemic signal an even higher prevalence of DAS in this occupational group worldwide (Mudło-Głagolska & Larionov, 2022). In Poland, during the period of the first wave of the pandemic (16.03-26.06.2020), at least mild levels of DAS were experienced by, respectively: 44.1, 45.5, and 46.9% of elementary school teachers (Jakubowski & Sitko-Dominik, 2021). In the second wave (12.2020-02.2021), there were already more such individuals, respectively (55.0, 50.7, and 47.1%). Therefore, it follows that, compared to our pre-pandemic survey, the prevalence of anxiety (25%) and depression (18.2%) more than doubled. Similarly, lower levels of mental health problems have been reported in other countries (Ozamiz-Etxebarria et al., 2021). All these data show a trend of declining well-being and increasing mental health problems in this group.

Previous observations have identified many factors that increase the risk of DAS (personality of the employee, how he functions in the work environment and elements related to the organisation, especially its culture) (Ozamiz-Etxebarria et al., 2021). The pandemic has attached other: telecommuting, increased working hours and low levels of reconciliation between work and family, mainly among

women (Ozamiz-Etxebarria et al., 2021). It shows that monitoring those factors that may be important in remedial strategies is necessary. Little is known about the association of individual mental disorder factors with teachers' lifestyle risk factors, e.g., prolonged sitting and too little PA. In addition, these factors became even more prevalent and threatening during the COVID-19 pandemic.

Our results show that almost 30% of the teachers surveyed sat for more than 7.5 hours a day. Compared to previous Polish studies regarding those with higher education, sitting time increased by about 2.5 h/day (Biernat & Piątkowska, 2014). It is a big risk, as sitting for long periods can increase the risk of cardiovascular disease or cardiovascular mortality (López-Valenciano et al., 2020).

It is significant that of all the factors we analysed, only low PAL had a significant association with all the explanatory variables, i.e., total and individual disorders (DAS). It should be mentioned that the Swedish study did not confirm the association between lifestyle factors and occupational burnout (Arvidsson et al., 2016). According to binary logistic regression, Polish teachers with low PA were more likely to experience moderate, severe, or extremely severe symptoms: depression (3.6 times), anxiety (3.3 times), and stress (2.8 times) which partially confirms H1-3. It indicates the importance of PA interventions for maintaining mental health in this group. This conclusion is supported by an earlier meta-analysis by Bogaert et al. (2014) and results for P.E. teachers, who report better mental health and less occupational stress than their colleagues. Participation in PA can significantly reduce the risk of stress, depression and fear (Cheung et al., 2016). More active people have greater immunity and better mental health than those with sedentary lifestyles (Bogaert et al., 2014). Our second finding supports it, which shows that teachers who sit >7.5h/day are 4.9 times more likely to be depressed. Thus, a rapid response is needed in the teaching community, and strategies need to be implemented: increasing PA, which the cited studies show has the potential to combat mental disorders, and reducing sitting time.

Conclusions

Of all the factors analysed, only teachers' PA is significant for the prevalence of single indicators of mental disorders (moderately to extremely severe levels of DAS) and total negative emotional symptoms. The main conclusion is to conduct activities that increase PA and reduce sitting time. Raising awareness of the benefits of PA for mental health and introducing specific programs is needed, e.g., classes taught by school PE teachers.

Of course, we do not downplay the importance of other risk factors for mental disorders, such as unsatisfactory salaries and excessive workloads. Nevertheless, these facts call for deeper analysis and action by policymakers. However, if PA (without special expenditures and legislative changes) can extent minimise DAS among teachers, why not introduce such programs in their environment? The synchronisation of PA classes with the structural and organisational activities of the school in question, as well as the teacher's situation and capabilities, will be of great importance for the success of such a strategy (Stapleton et al., 2020). The issue of increasing PA should be included in workplace policies, such as career counselling and training in problem-solving and emotion regulation.

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References

Abdullah, A. S., & Ismail, S. N. (2019). A Structural equation model describes factors contributing teachers' job stress in primary schools. *International Journal of Instruction*, *12*(1), 1251–1262. https://doi.org/10.29333/iji.2019.12180a

Arvidsson, I., Håkansson, C., Karlson, B., Björk, J., & Persson, R. (2016). Burnout among Swedish school teachers – A cross-sectional analysis. *BMC Public Health*, *16*(1), 823. https://doi.org/10.1186/s12889-016-3498-7

Betoret, F. D. (2009). Self-efficacy, school resources, job stressors and burnout among Spanish primary and secondary school teachers: a structural equation approach. *Educational Psychology*, *29*(1), 45–68. https://doi.org/10.1080/01443410802459234

Biernat, E., & Piątkowska, M. (2014). Individual and environmental factors determining sedentary lifestyle of the Polish population. *Iranian Journal of Public Health*, *43*(8), 1033–1044.

Biernat, E., Piątkowska, M., & Rozpara, M. (2022). Is the prevalence of low physical activity among teachers associated with depression, anxiety, and stress? *International Journal of Environmental Research and Public Health*, *19*(14). https://doi.org/10.3390/ijerph19148868

Biernat, E., Skrok, Ł., Majcherek, D., & Nałęcz, H. (2020). Socioecological Profile of Active Adults. Sport as a Whole-life Choice. *Physical Culture and Sport. Studies and Research*, *85*(1), 59–76. https://doi.org/10.2478/pcssr-2020-0007

Biernat, E., Stupnicki, R., & Gajewski, A. (2007). International Physical Activity Questionnaire (IPAQ) – Polish version. *Wychowanie Fizyczne i Sport*, *51*(1), 47–54.

Bogaert, I., Martelaer, K. de, Deforche, B., Clarys, P., & Zinzen, E. (2014). Associations between different types of physical activity and teachers' perceived mental, physical, and work-related health. *BMC Public Health*, *14*, 534. https://doi.org/10.1186/1471-2458-14-534

Carlotto, M. S., & Câmara, S. G. (2015). Prevalence and risk factors of common mental disorders among teachers. *Revista De Psicología Del Trabajo Y De Las Organizaciones*, *31*(3), 201–206. https://doi.org/10.1016/j.rpto.2015.04.003

Cheung, T., Wong, S. Y., Wong, K. Y. [Kit Yi], Law, L. Y., Ng, K., Tong, M. T., . . . Yip, P. S. F. (2016). Depression, Anxiety and Symptoms of Stress among Baccalaureate Nursing Students in Hong Kong: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, *13*(8). https://doi.org/10.3390/ijerph13080779

Domagalska, J., Rusin, M., Razzaghi, M., & Nowak, P. (2021). Personality type D, level of perceived stress, insomnia, and depression among high school Teachers in Poland. *Frontiers in Psychology*, *12*, 626945. https://doi.org/10.3389/fpsyg.2021.626945

Gerber, M., & Pühse, U. (2009). Review article: Do exercise and fitness protect against stress-induced health complaints? A review of the literature. *Scandinavian Journal of Public Health*, *37*(8), 801–819. https://doi.org/10.1177/1403494809350522

Grzegorzewska, M. K. (2018). Stres w zawodzie nauczyciela wynikający ze zmian w przestrzeni edukacyjnej i rzeczywistości społecznej [Stress in the teaching profession resulting from changes in the educational space and social reality [Stress in the teaching profession resulting from changes in the educational space and social reality]. *Pedagogika Przedszkolna i Wczesnoszkolna*, *2*(12), 363–370.

Jakubowski, T. D., & Sitko-Dominik, M. M. (2021). Teachers' mental health during the first two waves of the COVID-19 pandemic in Poland. *PloS One*, *16*(9), e0257252. https://doi.org/10.1371/journal.pone.0257252

Kidger, J., Brockman, R., Tilling, K., Campbell, R., Ford, T., Araya, R., . . . Gunnell, D. (2016). Teachers' wellbeing and depressive symptoms, and associated risk factors: A large cross sectional study in English secondary schools. *Journal of Affective Disorders*, *192*, 76–82. https://doi.org/10.1016/j.jad.2015.11.054

Lopez, A. D., Mathers, C. D., Ezzati, M., Jamison, D. T., & Murray, C. J. L. (2006). *Global burden of disease and risk factors*. The World Bank. https://doi.org/10.1596/978-0-8213-6262-4

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335–343. https://doi.org/10.1016/0005-7967(94)00075-u

Loyen, A., van der Ploeg, H. P., Bauman, A., Brug, J., & Lakerveld, J. (2016). European Sitting Championship: Prevalence and Correlates of Self-Reported Sitting Time in the 28 European Union Member States. *PloS One*, *11*(3), e0149320. https://doi.org/10.1371/journal.pone.0149320

López-Valenciano, A., Mayo, X., Liguori, G., Copeland, R. J., Lamb, M., & Jimenez, A.

(2020). Changes in sedentary behaviour in European Union adults between 2002 and 2017. *BMC Public Health*, *20*(1), 1206. https://doi.org/10.1186/s12889-020-09293-1

Makara-Studzińska, M., Tyburski, E., Załuski, M., Adamczyk, K., Mesterhazy, J., & Mesterhazy, A. (2022). Confirmatory Factor Analysis of Three Versions of the Depression Anxiety Stress Scale (DASS-42, DASS-21, and DASS-12) in Polish Adults. *Frontiers in Psychiatry*, *12*. https://doi.org/10.3389/fpsyt.2021.770532

Maslach, C., & Leiter, M. P. (2017). New insights into burnout and health care: Strategies for improving civility and alleviating burnout. *Medical Teacher*, *39*(2), 160–163. https://doi.org/10.1080/0142159X.2016.1248918

Moy, F. M., Hoe, V. C. W., Hairi, N. N., Buckley, B., Wark, P. A., Koh, D., . . . Bulgiba, A. M. (2014). Cohort study on clustering of lifestyle risk factors and understanding its association with stress on health and wellbeing among school teachers in Malaysia (CLUSTer) – A study protocol. *BMC Public Health*, *14*, 611. https://doi.org/10.1186/1471-2458-14-611

Mudło-Głagolska, K., & Larionov, P. (2022). Quality of Life in Schoolchildren, Their Parents and Teachers during the COVID-19 pandemic: psychosomatic health, teachers' and parents' burnout along with the prevalence of depressive and anxiety symptoms. *Przegląd Badań Edukacyjnych*, *36*(1), 67–89. https://doi.org/10.12775/PBE.2022.004

Ozamiz-Etxebarria, N., Idoiaga Mondragon, N., Bueno-Notivol, J., Pérez-Moreno, M., & Santabárbara, J. (2021). Prevalence of Anxiety, Depression, and Stress among Teachers during the COVID-19 Pandemic: A Rapid Systematic Review with Meta-Analysis. *Brain Sciences*, *11*(9). https://doi.org/10.3390/brainsci11091172

Puertas-Molero, P., Zurita-Ortega, F., Chacón-Cuberos, R., Martínez-Martínez, A., Castro-Sánchez, M., & González-Valero, G. (2018). An explanatory model of emotional intelligence and its association with stress, burnout syndrome, and non-verbal communication in the university teachers. *Journal of Clinical Medicine*, *7*(12). https://doi.org/10.3390/jcm7120524

Rottermund, J., Knapik, A., Saulicz, M., & Myśliwiec, A. (2014). Czy aktywność fizyczna pedagogów jest wzorem do zachowań prozdrowotnych wychowanków? [Is physical activity of educators a role model for health behaviors of their students?]. *Probl Hig Epidemiol*, *95*(3), 667–672. Retrieved from http://www.phie.pl/pdf/phe-2014/phe-2014-3-667.pdf

Silva, D. F. O., Cobucci, R. N., Lima, S. C. V. C., & Andrade, F. B. de (2021). Prevalence of anxiety, depression, and stress among teachers during the COVID-19 pandemic: A PRISMA-compliant systematic review. *Medicine*, *100*(44), e27684. https://doi.org/10.1097/MD.0000000000027684

Stapleton, P., Garby, S., & Sabot, D. (2020). Psychological distress and coping styles in teachers: A preliminary study. *Australian Journal of Education*, *64*(2), 127–146. https://doi.org/10.1177/0004944120908960

Yuziani, & Maulina, M. (2018). The Correlation between Stress Level and Degree of Depression in the Elderly at a Nursing Home in Lhokseumawe in the Year 2017. In *Emerald Reach Proceedings Series. Proceedings of MICoMS 2017* (Vol. 1, pp. 497–502). Emerald Publishing Limited. https://doi.org/10.1108/978-1-78756-793-1-00044

AUTHORS

MONIKA PIĄTKOWSKA

Dr hab., professor AWF, Chair of Management, Organisation and Economy,
Józef Piłsudski University of Physical Education in Warsaw,
Marymoncka 34; 00-968 Warsaw
E-mail: monika.piatkowska@awf.edu.pl
ORCID: 0000-0003-3844-550X

ELŻBIETA BIERNAT

Prof. dr hab, professor, Collegium of World Economy, Warsaw School of Economics, Poland,
al. Niepodległości 162, 02-554 Warsaw
E-mail: elzbieta.biernat@sgh.waw.pl
ORCID: https://orcid.org/0000-0002-4675-5017