



Selected Determinants of Health Behaviors of Primary School Teachers in the Kalisz County in Poland

Submitted: 25 October 2023; Accepted: 03 April 2024; Published: 19 April 2024

Kamila Kmieć¹

<https://orcid.org/0000-0002-6302-6078>

Małgorzata Pikala²

<https://orcid.org/0000-0003-4426-4908>

¹ University of Kalisz, University of Kalisz, Poland

² Department of Epidemiology and Biostatistics, Medical University of Lodz, Poland

Address for correspondence

Kamila Kmieć
University of Kalisz,
4 Nowy Świat St., 62-800 Kalisz, Poland
k.kmiec@uniwersytetkaliszki.edu.pl

Abstract

Objectives: *The main goal of this paper is to assess the health behaviors of primary school teachers from the Kalisz county in the context of selected sociodemographic determinants.*

Material and methods: *The study was carried out between September and December 2021 among 500 primary school teachers in the Kalisz county in Poland. The selection of schools for the study was purposive sampling; 22 schools were randomly selected from primary schools in the Kalisz county. Ultimately, 315 correctly completed questionnaires were qualified for the study. The study employed the Authors' Questionnaire Survey and the following standardized questionnaire: Inventory of Health-Related Behavior (IHB). Calculations were performed using STATISTICA 13.3 PL (TIBCO Software).*

Results: *The intensity of health behaviors was described as 'average' by 61.90% of the respondents. Based on the IHB questionnaire, it was found that the 'preventive behaviors' of the respondents had the strongest impact on their behavior and health. In the analyzed group, incorrect health behaviors (low physical activity or sedentary forms of leisure) prevailed.*

Conclusions: *The study discovered the prevalence of anti-health behaviors, which were dependent on sociodemographic factors. It is necessary to introduce corrective actions aimed at raising teachers' health awareness and eliminating anti-health behaviors among this professional group.*

Key words: *other, management in health care*

Introduction

There are many definitions and classifications of the term *health behaviors* in the literature [1, 2, 3, 4, 5, 6, 7, 8, 9]. According to various authors, it should be stated that 'health behaviors' refer to various activities related

to the sphere of health, i.e., behaviors that, in the light of modern medical knowledge, usually cause specific (positive or negative) health effects [3, 10, 11, 12, 13, 14, 15, 16, 17]. There are many typologies for the division of health behaviors. The most frequently used categorization focuses on health effects for human health. Two opposing groups of behaviors should, therefore, be distinguished: positive (pro-health) and negative (anti-health) [2, 3, 4, 18, 19, 20, 21].

Certain behaviors are shaped by external factors, personal experiences, as well as acquired knowledge and skills, which leads to increased health awareness [8, 9, 10, 13, 14, 22].

Health behaviors are also conditioned by demographic and social factors. The demographic and social determinants of health behaviors include, for example: age, gender, as well as marital status, family situation, education, profession, and financial situation. Researchers emphasize that the awareness and practice of proper health behaviors increases with age. Education, marital status or economic situation differentiate attitudes toward health and illness. The authors of this article focused on factors such as age and gender [17, 22, 23, 24, 25, 26, 27, 28, 29].

Schools in Poland and around the world constitute an educational environment, where cultural and health behavior patterns of children and youth can be developed and consolidated. Therefore, it is extremely important to promote health in the school environment. Health education performs an important role in the process of health promotion. It is related to entrusting the teacher with the role of a 'health guide'. The teacher must be included into the process of educating the young generation in terms of the value of health and leading a healthy lifestyle [30, 31, 32, 33, 34, 35].

It is, therefore, desirable that the teacher, who serves as a role model, represents the correct health behaviors. The good physical and mental health of a teacher translates into their ability to perform their duties. Teachers, however, do indulge in incorrect health behaviors [34, 36, 37, 38, 39, 40].

Such behaviors lead to numerous illnesses among teachers, such as cardiovascular diseases, obesity, digestive system diseases, type II diabetes, and psychosomatic disorders [37, 39, 40].

The main goal of this paper is to assess the health behaviors of primary school teachers from the Kalisz county in Poland in the context of selected sociodemographic determinants.

Materials and method

The authors carried out the study with the help of a diagnostic survey method. The technique used was a survey questionnaire, which was formulated with precise, specific, and one-problem questions. All the research was carried out personally in 22 primary schools in the Kalisz county in Poland.

The research tools used in the study were *an authors' survey questionnaire on health behaviors of teachers* and the standardized Inventory of Health-Related Behavior (IHB) adapted by Z. Juczyński [41].

The authors' questionnaire consisted of 38 questions regarding demographic and social data, lifestyle, eating behaviors, the use of stimulants, as well as health status. The IHB questionnaire consisted of 24 statements describing various types of health-related behaviors. Its use helped determine the intensity of four health categories: eating habits, preventive behaviors, positive mental attitude, and health practices. Participation in the study was voluntary and involved completing an anonymous survey questionnaire. The research toolkit was accompanied by the respondent's statement regarding consent to participate in the study; respondents were given information about the study. Respondents could refrain from completing the questionnaire at any stage. Since the moment of agreeing to participate in the study, the collected data about the respondents was stored in a secure place with no access by unauthorized persons. Before the proper research began, pilot studies were carried out to check the research tools and organization of the study.

The inclusion criteria for the study were: current profession of an active primary school teacher in the Kalisz county, and the consent to participation in the study. The exclusion criterion was a profession different than the primary school teacher in the Kalisz county, and lack of consent to participation in the study.

The study was conducted between September and December 2021 among 500 teachers of primary schools in the Kalisz county in Poland. Ultimately,

15 correctly completed questionnaires were qualified for the study. Due to incorrect completion, 185 questionnaires were not qualified for further analysis; however, this study group is a representative one.

The study was approved by the Bioethical Committee of the President Stanisław Wojciechowski Kalisz University – Resolution No. 3/2021, September 23, 2021.

Quantitative and categorical (nominal and ordinal) variables were presented using the descriptive statistics methods. The following measures were determined for quantitative variables: central tendency (mean (M) and median (Mdn)) and volatility (standard deviation (SD) and quartile deviation (IQR/2), as well as variation coefficient (CV)). Structure measures were determined for categorical variables: number (N) and frequency (%). Selected data were visualized using histograms and box plots.

A null hypothesis testing approach was used for statistical inference. Statistical tests were selected based on the type of measurement scale of the dependent variable and the number of levels (variants) of the dependent variable. Correlation assessment methods were used to analyze the interdependence of two variables. For two-sided tests, two-sided hypotheses were verified.

Cross-tabulation and the χ^2 Pearson's test were used to evaluate the differences between the samples with variables expressed on a nominal scale. However, for dependent variables expressed on an ordinal scale, differences between samples were assessed using a Mann-Whitney U test (for two samples) or Kruskal–Wallis test (for more than two samples). In the case of dependent variables described with a quantitative scale, differences between samples were assessed using the Student's t-test. The correlation analysis was carried out by calculating the Goodman and Kruskal gamma coefficient (γ), which is one of the measures of assessing the relationship between two ordinal variables. The gamma coefficient ranges from -1 to +1, where values tending to unity indicate a high degree of agreement between the ordering of both variables, which means a strong correlation.

All calculations were performed using STATISTICA 13.3 PL (TIBCO Software). The authors assumed *a priori* the level of statistical significance below which the null hypothesis was rejected – at 0.05.

Results

The overview of the subjects

In the surveyed group of teachers (N = 315, 100.0%), the vast majority were women (N = 277, 87.9%), people living in rural areas (N = 188, 59.7%), and married people (N = 235, 74.6%). All of them had a university degree. The average age of the respondents was 46.1 (SD = 9.62, min-max 23–65 years), and the average work experience was 22.1 years (SD = 10.46, min-max. 0.5–41.0 years). The respondents described the financial situation of their family as 'average' (N = 122, 38.7% and N = 168, 53.3%, respectively) (Table 1).

Table 1. Summary of selected demographic and social characteristics of the surveyed group of teachers (N = 315)

	N	%
Gender		
female	277	87.9
male	38	12.1
Place of residence		
rural	188	59.7
<100,000	90	28.6
>100,000	37	11.7
Education		
higher	315	100.0
Marital status		
single	71	22.5
informal relationship	9	2.9
formal relationship	235	74.6
The financial situation of the family		
poor	3	1.0
average	122	38.7
good	168	53.3
very good	22	7.0
Age group		
≤30	24	7.6
31–40	70	22.2
41–50	115	36.5
>50	105	33.7
Years of experience		
≤5	19	6.0
6–10	29	9.2
11–15	46	14.6
16–20	57	18.1
21–25	53	16.8
26–30	34	10.8
31–35	32	10.2
>35	45	14.3

The respondents were satisfied with their choice of career path ($M \pm SD$: 8.31 ± 1.84 ; min-max 1-10), and reported only slightly lower overall satisfaction with their job ($M \pm SD$: 7.95 ± 1.94 ; min-max 1–10) (Table 2).

Table 2. Summary of selected demographic and social characteristics of the surveyed group of teachers (N = 315)

	M	SD	Mdn	IQR/2	Min.	Max.	CV [%]
Age	46.10	9.62	46.0	7.5	23.0	85.0	20.9
Years of experience	22.10	10.46	21.0	8.0	0.5	41.0	47.3
Satisfaction with the choice of profession	8.31	1.84	9.0	1.5	1.0	10.0	22.1
Job satisfaction	7.95	1.94	8.0	1.5	1.0	10.0	24.4

M – mean, Mdn – median, SD – standard deviation, IQR/2 – quartile deviation, CV – coefficient of variation

Respondents' self-assessment of their health status

The respondents noticed a link between the financial situation of their family and their health. Such a correlation was indicated by a total of N = 207 respondents (65.7%), and as many as 37.8% (N = 119) assessed this relationship as 'significant' (Table 3).

Table 3. Subjective self-assessment of the relationship between the financial situation of the family and its impact on health in the surveyed group of teachers (N = 315)

Does financial situation affect health?	N	%
Yes, it has a significant impact	119	37.8
Yes, it has some impact	88	27.9
No, it has no impact	77	24.4
No connection *	31	9.8

Among the reported chronic diseases, the respondents often declared the presence of arterial hypertension (N = 51, 16.2%) and thyroid diseases (N = 77, 24.4%). Among 'other diseases', those related to the endocrine system were often mentioned (Table 4).

Table 4. Prevalence of selected chronic diseases among the respondents (N = 315)

Chronic disease	N	%
Thyroid disease	77	24.4
Hypertension	51	16.2
Allergy	24	7.6
Obesity	13	4.1
Depression	11	3.5
Diabetes	8	2.5
Atherosclerosis	5	1.6
Ischemic heart disease	5	1.6
Osteoporosis	3	1.0
Other diseases	56	17.8

Among the many different ailments experienced by the teachers in the previous 3 months, the following were dominant: back pain (N = 124, 39.4%), vision problems (N = 100, 31.7%), sleep disorders (N = 86, 27.3%), and headaches (N = 76, 24.1%) (Table 5).

Table 5. Ailments in the previous 3 months in the subjective assessment of the teachers (N = 315)

Ailments experienced in the previous 3 months	N	%
Back pain	124	39.4
Vision problems	100	31.7
Sleep disorders	86	27.3
Headaches	76	24.1
General anxiety, fear	51	16.2
Joint pain	40	12.7
Hearing impairment	21	6.7
Exercise-induced dyspnea	20	6.3
Thigh edema	19	6.0
Chest pain	18	5.7
Stomachache	16	5.1
Dizziness	14	4.4
Other (e.g. cough, diarrhea, nausea)	41	13.0

The respondents assessed their health very favorably. In a subjective assessment, 'good' and 'very good' condition was declared by a total of 74.9%

of respondents (N = 236). Only N = 4 respondents rated their health as 'very poor' or 'poor', which constitutes 1.2% of the whole group (Table 6).

Table 6. Self-assessment of the respondents' health (N = 315)

Health self-assessment	N	%
Very poor	2	0.6
Poor	2	0.6
Mediocre	75	23.8
Good	197	62.5
Very good	39	12.4

Approx. 14% of respondents (N = 43) declared that in 2020–2021 they were hospitalized, of which 32 people had only a single stay in the hospital. More than half of the respondents (N = 182, 57.8%) regularly took medications on doctor's orders. Additionally, the respondents declared that they also took medications without medical indications. Among these drugs, analgesics were predominant (N = 228, 72.4%) (Table 7).

Table 7. Selected aspects related to the health of the respondents (N = 315)

	N	%
Hospitalizations in the previous 2 years		
No	272	86.3
Yes	43	13.7
Number of hospitalizations in the previous 2 years		
1	32	10.2
2	5	1.6
3	2	0.6
4 or more	4	1.3
Medications taken on doctor's order		
No	133	42.2
Yes	182	57.8
Medications taken without doctor's order		
Painkillers	228	72.4
Sedatives	50	15.9
Sleeping pills	21	6.7
Blood pressure lowering drugs	10	3.2
Other (specify)	28	8.9

The assessment of health-related behaviors was measured using a standardized tool – the Inventory of Health-Related Behavior (IHB), which allows the conversion of the total score in points (the so-called general indicator of the intensity of health behaviors) into the Sten scale based on the developed standards for the Polish population of healthy adults, taking into account gender and age of the respondents. The raw scores for the total point score show a slight right-sided asymmetry (skewness = 0.234) with a mean score of 84.49 (SD = 11.91) and a median of 84.0. These results indicate a certain prevalence of subjects with a low and average intensity of health behaviors in relation to those with a high intensity (Figure 1).

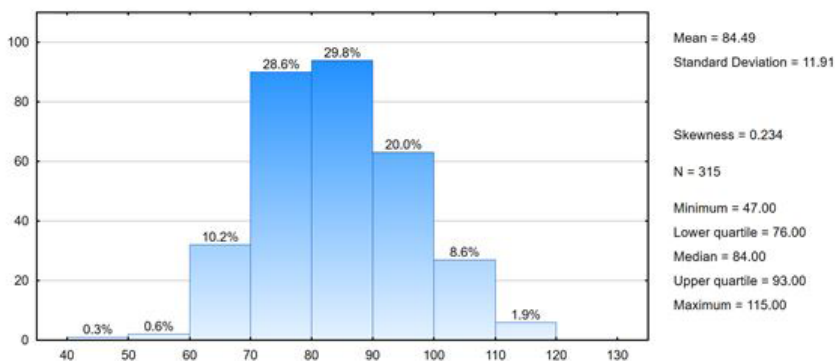


Figure 1. Characteristics of the general indicator of the intensity of health behaviors according to the Inventory of Health Behaviors in the group of respondents (N = 315)

The scores converted to the Sten scale helped distinguish three groups of respondents, characterized by low, average, and high intensity of health behaviors (Table 8).

Table 8. Groups of respondents with different general indicators of the intensity of health behaviors

The general indicator of the intensity of health behaviors	N	%
Low intensity of health behaviors	28	8.89
Average intensity of health behaviors	195	61.90
High intensity of health behaviors	92	29.21

Since the Inventory of Health-Related Behavior (IHB) not only calculates the general indicator of the intensity of health behaviors, but also allows distinguishing individual categories of these behaviors (eating habits, preventive behaviors, positive mental attitude, health practices), the obtained results were also converted into these four categories, taking into account the average score in each subscale (Table 9).

Table 9. Description of specific categories of health behaviors according to Inventory of Health-Related Behavior (IHB)

Categories of health behaviors	M	SD	Mdn	IQR/2	Min.	Max.	CV [%]
Correct eating habits	3.52	0.67	3.50	0.50	1.67	5.00	19.1
Preventive behaviors	3.50	0.72	3.50	0.50	1.67	7.00	20.7
Positive mental attitude	3.65	0.59	3.67	0.50	1.83	5.00	16.3
Health practices	3.39	0.56	3.33	0.42	1.83	4.67	16.5

M – mean, Mdn – median, SD – standard deviation, IQR/2 – quartile deviation, CV – coefficient of variation

Health behaviors by gender of the subjects

Eating habits

The study revealed that male respondents consumed significantly more meals than female respondents (F/M: N = 82, 29.60% / N = 24, 63.16%; $z=-4.134$; $p < 0.001$). It is, however, important that women more often than men ate all meals – except for dinner (F/M breakfast: N = 231, 83.39% / N = 25, 65.79%;

$z = -2.496$; $p = 0.013$; brunch: $N = 152$, 54.87% / $N = 15$, 39.47%; $z = -2.074$; $p = 0.038$; dinner: $N = 258$, 93.14% / $N = 31$, 81.58%; $z = -2.394$; $p = 0.017$, and afternoon snack: $N = 110$, 39.71% / $N = 9$, 23.68%; $z = -2.369$; $p = 0.018$).

Men consumed statistically significantly more meals than women. With the exception of dinner, other meals were eaten more often by women than by men (Table 10).

Table 10. Frequency of meal consumption by respondents

	Women (N = 277)		Men (N = 38)		z	p*
	N	%	N	%		
Number of meals per day						
<3	9	3.25	0	0.00	-4.134	<0.001
4 to 5	186	67.15	14	36.84		
>5	82	29.60	24	63.16		
Consumption of breakfast						
Daily	231	83.39	25	65.79	-2.496	0.013
Several times a week	27	9.75	9	23.68		
Once a week	13	4.69	3	7.89		
Once a month	2	0.72	0	0.00		
Never	4	1.44	1	2.63		
Consumption of brunch						
Daily	152	54.87	15	39.47	-2.074	0.038
Several times a week	68	24.55	10	26.32		
Once a week	14	5.05	2	5.26		
Once a month	11	3.97	3	7.89		
Never	32	11.55	8	21.05		
Consumption of dinner						
Daily	258	93.14	31	81.58	-2.394	0.017
Several times a week	17	6.14	7	18.42		
Once a week	2	0.72	0	0.00		
Once a month	0	0.00	0	0.00		
Never	0	0.00	0	0.00		

	Women (N = 277)		Men (N = 38)		z	p*
	N	%	N	%		
Consumption of afternoon snack						
Daily	110	39.71	9	23.68	-2.369	0.018
Several times a week	83	29.96	11	28.95		
Once a week	27	9.75	5	13.16		
Once a month	9	3.25	1	2.63		
Never	48	17.33	12	31.58		
Consumption of supper						
Daily	207	74.73	29	76.32	0.380	0.704
Several times a week	37	13.36	6	15.79		
Once a week	16	5.78	3	7.89		
Once a month	6	2.17	0	0.00		
Never	11	3.97	0	0.00		

* Mann-Whitney U test

The analysis helped discover that vegetables and fruits were eaten several times a day more often by women than men (F/M: N = 118, 42.60% / N = 11, 28.95%; $z = -1.931$; $p = 0.053$). Importantly, sweets were eaten several times a week mostly by women rather than by men (F/M: N = 80, 28.88% / N = 7, 18.42%; $z = -0.211$; $p = 0.833$).

Men significantly more often than women consumed red meat (beef/pork) (F/M: N = 103, 37.18% / N = 20, 52.63%; $z = 2.131$; $p = 0.033$) and dairy products (F/M: N = 50, 18.05% / N = 11, 28.95%, $z = 2.073$, $p = 0.038$) (Table 11).

Table 11. Frequency of consumption of selected food products by gender

	Women (N = 277)		Men (N = 38)		z	p*
	N	%	N	%		
Vegetables						
Several times a day	118	42.60	11	28.95	-1.931	0.053
Once a day	103	37.18	14	36.84		
Once a week	10	3.61	3	7.89		
Several times a week	41	14.80	10	26.32		
Once a month	0	0.00	0	0.00		
Several times a month	5	1.81	0	0.00		
I don't consume it	0	0.00	0	0.00		

	Women (N = 277)		Men (N = 38)		z	p*
	N	%	N	%		
Fruit						
Several times a day	109	39.35	11	28.95	-1.616	0.106
Once a day	118	42.60	15	39.47		
Once a week	6	2.17	4	10.53		
Several times a week	38	13.72	8	21.05		
Once a month	1	0.36	0	0.00		
Several times a month	3	1.08	0	0.00		
I don't consume it	2	0.72	0	0.00		
Fish						
Several times a day	2	0.72	0	0.00	1.039	0.299
Once a day	4	1.44	0	0.00		
Once a week	134	48.38	24	63.16		
Several times a week	25	9.03	2	5.26		
Once a month	64	23.10	7	18.42		
Several times a month	41	14.80	2	5.26		
I don't consume it	7	2.53	3	7.89		
Poultry						
Several times a day	8	2.89	1	2.63	1.059	0.290
Once a day	14	5.05	3	7.89		
Once a week	58	20.94	9	23.68		
Several times a week	150	54.15	21	55.26		
Once a month	5	1.81	2	5.26		
Several times a month	36	13.00	1	2.63		
I don't consume it	6	2.17	1	2.63		
Beef/pork						
Several times a day	5	1.81	0	0.00	2.131	0.033
Once a day	10	3.61	4	10.53		
Once a week	58	20.94	8	21.05		
Several times a week	103	37.18	20	52.63		
Once a month	24	8.66	2	5.26		
Several times a month	64	23.10	4	10.53		
I don't consume it	13	4.69	0	0.00		

	Women (N = 277)		Men (N = 38)		z	p*
	N	%	N	%		
Cereal products (pasta, groats, flour products)						
Several times a day	76	27.44	13	34.21	0.535	0.593
Once a day	65	23.47	6	15.79		
Once a week	43	15.52	8	21.05		
Several times a week	79	28.52	9	23.68		
Once a month	1	0.36	1	2.63		
Several times a month	11	3.97	1	2.63		
I don't consume it	2	0.72	0	0.00		
Dairy products						
Several times a day	50	18.05	11	28.95	2.073	0.038
Once a day	92	33.21	15	39.47		
Once a week	38	13.72	3	7.89		
Several times a week	66	23.83	7	18.42		
Once a month	4	1.44	0	0.00		
Several times a month	16	5.78	2	5.26		
I don't consume it	11	3.97	0	0.00		
Sweets						
Several times a day	44	15.88	5	13.16	-0.211	0.833
Once a day	65	23.47	10	26.32		
Once a week	22	7.94	4	10.53		
Several times a week	80	28.88	7	18.42		
Once a month	10	3.61	4	10.53		
Several times a month	40	14.44	7	18.42		
I don't consume it	16	5.78	1	2.63		
Fast food						
Several times a day	3	1.08	0	0.00	1.343	0.179
Once a day	0	0.00	1	2.63		
Once a week	9	3.25	2	5.26		
Several times a week	4	1.44	1	2.63		
Once a month	93	33.57	13	34.21		
Several times a month	59	21.30	11	28.95		
I don't consume it	109	39.35	10	26.32		

* Mann-Whitney U test

Physical activity

The results of the study showed that men significantly more often declared physical activity during the week (F/M: N = 10, 3.61% / N = 14, 36.84%; $z = -6.032$; $p < 0.001$), and spent less time on sedentary activities (watching TV, playing games, working on a computer) (F/M: N = 47, 16.97% / N = 15, 39.47%; $z = 2.129$; $p = 0.033$) (Table 12).

Table 12. Time spent on physical activity and sedentary activities by gender

	Women (N=277)		Men (N=38)		z	p*
	N	%	N	%		
Time per week spent on physical activity						
no activity	50	18.05	1	2.63	-6.032	<0.001
1–3 hours/week	180	64.98	14	36.84		
4–6 hours/week	37	13.36	9	23.68		
>6 hours/week	10	3.61	14	36.84		
Time per day spent on watching TV, playing games, working on a computer						
<1 hour/day	47	16.97	15	39.47	2.129	0.033
<1–2 hours/day	93	33.57	8	21.05		
<3–4 hours/day	98	35.38	11	28.95		
<5–6 hours/day	29	10.47	4	10.53		
7 and more hours/day	10	3.61	0	0.00		

* Mann-Whitney U test

The results of the study showed that the most preferred form of physical activity among the respondents was walking (F/M: N = 187, 67.51% / N = 20, 52.63%; $p = 0.070$) and cycling (F/M: N = 154, 55.60% / N = 26, 68.42%; $p = 0.134$).

However, men significantly more often chose swimming (F/M: N = 34, 12.27% / N = 11, 28.95%; $p = 0.006$), while women preferred *Nordic walking* (F/M: N = 42, 15.16% / N = 0, 0.00%; $p = 0.010$) and running (F/M: N = 28, 10.11% / N = 9, 23.68%; $p = 0.015$) (Table 13).

Table 13. Preferred physical activities by the gender

	Women (N=277)		Men (N=38)		χ^2	p*
	N	%	N	%		
Walking	187	67.51	20	52.63	3.283	0.070
Nordic walking	42	15.16	0	0.00	6.648	0.010
Running	28	10.11	9	23.68	5.941	0.015
Dance	26	9.39	1	2.63	1.945	0.163
Swimming	34	12.27	11	28.95	7.586	0.006
Cycling	154	55.60	26	68.42	2.244	0.134
Hiking	50	18.05	7	18.42	0.003	0.956
Fitness	37	13.36	2	5.26	2.018	0.155

* Pearson's chi2 test

The results of the study showed that men significantly more often undertook systematic physical activity than women (F/M: N = 33, 14.54% / N = 18, 48.65%; $p < 0.001$). (Table 14).

Table 14. Regularity of undertaken physical activity and its decrease during the pandemic by the gender

	Women (N=277)		Men (N=38)		χ^2	p*
	N	%	N	%		
Engaging in physical activity on a regular basis						
No	71	31.28	3	8.11	25.979	<0.001
Yes, sometimes	123	54.19	16	43.24		
Yes, always	33	14.54	18	48.65		

* Pearson's chi2 test

Used stimulants

The results of the study indicated that N = 21 (7.58%) women and N = 4 (10.53%) men smoked cigarettes ($p = 0.824$).

Men significantly more often than women declared that they abused alcohol in the past (F/M: N = 7, 2.53% / N = 2, 5.26%) and that they currently consume excessive amounts of alcohol (F/M: N = 2, 0.72%, N = 4, 10.53%, $p < 0.001$) (Table 15).

Table 15. Use of stimulants among the respondents by gender

	Women (N=277)		Men (N=38)		χ^2	p*
	N	%	N	%		
Smoking						
I do not smoke	215	77.62	27	71.05	0.905	0.824
I don't smoke now but I used to	31	11.19	5	13.16		
Sometimes	10	3.61	2	5.26		
I smoke	21	7.58	4	10.53		
Drinking alcohol						
I do not drink	83	29.96	9	23.68	18.388	<0.001
I don't drink but I used to	7	2.53	2	5.26		
Sometimes	185	66.79	23	60.53		
I drink	2	0.72	4	10.53		
Drinking coffee						
No	256	92.42	32	84.21	2.873	0.090
Yes	21	7.58	6	15.79		

* Pearson's chi2 test

Men consumed a statistically significantly greater amount of alcohol per 'glass' than women ($p = 0.009$) (Table 16).

Table 16. Amount of alcohol consumed by gender

	Women (N=175)		Men (N=16)		z	p*
	Mdn	IQR/2	Mdn	IQR/2		
The amount of alcohol consumed per month (glass)	3.0	1.00	4.0	1.25	-2.626	0.009

Mdn – median, IQR/2 – quartile deviation

* Mann-Whitney U test

Health behaviors by age

Eating habits

The results of the study proved that the consumption of breakfast increases with the age of the respondents. Thus, the frequency of eating breakfast correlated positively with age ($z = 2.603$, $p = 0.009$) (Table 17).

Table 17. Correlation of the frequency of meals consumed and the age of the respondents

	γ -Kruskal-Goodman*	z	p
Number of meals per day	0.05	0.698	0.485
Consumption of breakfast	0.20	2.603	0.009
Consumption of brunch	-0.01	-0.230	0.818
Consumption of dinner	0.19	1.600	0.110
Consumption of afternoon snack	-0.00	-0.086	0.932
Consumption of supper	-0.07	-0.991	0.322

* Gamma correlation coefficient

The analysis of the study results showed that there was a positive correlation between age and frequency of fruit consumption ($z = 2.804$, $p = 0.005$), and a negative correlation between age and frequency of consumption of dairy products ($z = -2.538$, $p = 0.011$) and fast food ($z = -2.538$, $p = 0.011$) = -8.507 , $p < 0.001$) (Table 18).

Table 18. Correlation of frequency of consumption of selected food products by age

	γ -Kruskal-Goodman*	z	p
Vegetables	0.02	0.423	0.673
Fruit	0.16	2.804	0.005
Fish	0.01	0.141	0.888
Poultry	0.00	0.074	0.941
Beef/pork	-0.06	-1.081	0.279
Grain products	-0.07	-1.323	0.186
Dairy products	-0.13	-2.538	0.011
Sweets	-0.02	-0.304	0.761
Fast food	-0.44	-8.507	<0.001

* Gamma correlation coefficient

Physical activity

The analysis of the study results showed that there was a positive correlation between the time per day spent on sedentary activities and the age of the respondents ($z = 3.661$, $p < 0.001$) (Table 19).

Table 19. Correlation of time spent on physical activity and sedentary activities

	γ -Kruskal-Goodman*	z	p
Time per week spent on physical activity	-0.05	-0.829	0.407
Time per day spent on sedentary activities (watching TV, playing games, working on a computer)	0.19	3.661	<0.001

* Gamma correlation coefficient

The most preferred form of physical activity for the respondents, regardless of their age, was walking (A/B/C: $N = 23$, 67.65% / $N = 83$, 68.60% / $N = 101$, 63.13%; $p = 0.613$). On the other hand, fitness (A/B/C: $N = 12$, 35.29% / $N = 14$, 11.57% / $N = 13$, 8.13%; $p < 0.001$), running (A/B/C: $N = 6$, 17.65% / $N = 22$, 18.18% / $N = 9$, 5.63%; $p = 0.003$), and cycling (A/B/C: $N = 23$, 67.65% / $N = 78$,

64.46% / N = 79, 49.38%; $p = 0.017$) were statistically significantly more often preferred by younger people than by older respondents (Table 20).

Table 20. Selected forms of physical activity by age

	<35 (A)		35-45 (B)		45+ (C)		χ^2	p*
	(N=34)		(N=121)		(N=160)			
	N	%	N	%	N	%		
Walking	23	67.65	83	68.60	101	63.13	0.978	0.613
Nordic walking	2	5.88	15	12.40	25	15.63	2.453	0.293
Running	6	17.65	22	18.18	9	5.63	11.760	0.003
Dance	5	14.71	14	11.57	8	5.00	5.625	0.060
Swimming	7	20.59	18	14.88	20	12.50	1.554	0.460
Cycling	23	67.65	78	64.46	79	49.38	8.121	0.017
Hiking	6	17.65	19	15.70	32	20.00	0.864	0.649
Fitness	12	35.29	14	11.57	13	8.13	19.200	<0.001

* Pearson χ^2 test

Systematic physical activity was 'always' undertaken by: N = 9 (28.15%) subjects aged < 35, N = 16 (15.53%) aged 35-45, and N = 26 (20.16%) aged 45+.

There was no statistically significant difference between the regularity of physical activity and the age of the respondents (Table 21).

Table 21. Regularity of physical activity by age

	<35 years (A)		35-45 (B)		45+ (C)		χ^2	p*
	(N=34)		(N=121)		(N=160)			
	N	%	N	%	N	%		
Engaging in physical activity on a regular basis								
No	9	28.13	25	24.27	40	31.01	4.973	0.290
Yes, sometimes	14	43.75	62	60.19	63	48.84		
Yes, always	9	28.13	16	15.53	26	20.16		

* Pearson χ^2 test

Used stimulants

The results of the study showed that among respondents aged up to 45, smoking cigarettes was relatively more common than in the group of older

subjects (A/B/C: N = 30, 88.24% / N = 98, 80.99% / N = 114, 71.25%; $p = 0.032$). Thus, older teachers smoked cigarettes significantly less often than younger respondents ($p = 0.032$). Alcohol was occasionally consumed by a significant proportion of respondents, regardless of their age (A/B/C: N = 19, 55.88% / N = 76, 62.81% / N = 113, 70.63%; $p = 0.181$) (Table 22).

Table 22. Use of stimulants among the respondents by age

	<35 years (A)		35–45 (B)		45+ (C)		χ^2	p*
	(N=34)		(N=121)		(N=160)			
	N	%	N	%	N	%		
Smoking								
I do not smoke	30	88.24	98	80.99	114	71.25	13.803	0.032
I don't smoke now but I used to	0	0.00	13	10.74	23	14.38		
Occasionally	3	8.82	4	3.31	5	3.13		
I smoke	1	2.94	6	4.96	18	11.25		
Drinking alcohol								
I do not drink	13	38.24	37	30.58	42	26.25	8.879	0.181
I don't drink but I used to	0	0.00	5	4.13	4	2.50		
Sometimes	19	55.88	76	62.81	113	70.63		
I drink	2	5.88	3	2.48	1	0.63		
Drinking coffee								
No	32	94.12	112	92.56	144	90.00	0.929	0.629
Yes	2	5.88	9	7.44	16	10.00		

* Pearson χ^2 test

The results of the study showed that there was no statistically significant correlation between the amount of alcohol consumed per month and the age of the respondents ($z = 0.382$, $p = 0.702$) (Table 23).

Table 23. Correlation between the amount of alcohol consumed and the age of the respondents

	γ -Kruskal-Goodman*	z	p
The amount of alcohol consumed per month (glass)	0.02	0.382	0.702

* Gamma correlation coefficient

Discussion

The teaching profession is characterized by the multidimensional nature of the assigned roles [21, 22, 23, 24]. The teacher should be one of the key animators of a correct lifestyle not only for students but also for the entire local environment [34, 35, 38, 39, 40].

Studies on teachers' health behaviors and lifestyle covers small – and thus unrepresentative – groups. The variety of research tools and methods used by scientists makes it impossible to make comparisons on an international scale.

According to the conducted study, which employed the Inventory of Health-Related Behavior (IHB), the intensity of health behaviors was defined by the majority of respondents as average – 61.90%. *Preventive behaviors* were most often chosen by the respondents as the most important sphere for maintaining good health. It was found that the more correct *eating habits*, *mental attitude* and the higher intensity of *health practices*, the higher the teachers' subjective self-assessment of health.

The analysis of the study showed that the most common diseases among teachers were thyroid diseases – 24.4% and arterial hypertension – 16.2%. Additionally, the following ailments were reported: back pain – 39.4%, and vision problems – 31.7%. However, according to studies conducted outside of Europe – e.g., in South Africa – it was discovered that the most common chronic diseases in teachers were hypertension (48.5%), lipid metabolism disorders (20.5%), diabetes (10.1%), and kidney disease (10.4%) [28].

Authors' own study showed that teachers suffered mostly from the following ailments: back pain – 39.4%, vision problems – 31.7%, sleep disorders – 27.3%, headaches – 24.1%, and general anxiety, fear – 16.2%. The results of

the study on the health of teachers in Hongkong indicated the occurrence of similar ailments, among which the following were most prevalent: vision problems – 79.9%, anxiety – 75.5%, sleep disorders – 74.4%, and lower back pain – 59.2% [30].

Studies conducted in a few research centers in Poland on the general health of teachers showed how many health problems teachers faced. The health condition was mostly defined as ‘poor’ (74.98%) [42]. In authors’ own research, however, the teachers’ health condition (subjective self-assessment) was assessed as ‘good’ (62.5%). Similar results were obtained in Israel – 54% of respondents described their health as ‘good’ and ‘excellent’, while in Brazil teachers described their health as ‘good’ (58.6%) and ‘very good/excellent’ 36.4% [25, 42]. However, the prevalence of incorrect health behaviors among teachers discovered by authors’ study cannot be overlooked, as it may result in deterioration of their health in the future.

According to the studies by Graciano et al. conducted in Brazil, teachers regularly take drugs not prescribed by a doctor, such as sedatives (45.7%) [4]. Authors’ own study showed that teachers declared taking analgesics (72.4%) and sedatives (15.9%) as well. Taking medications without a specific indication by a doctor may result in many physical health problems and disorders in the area of mental health in the future [21, 43].

The role of the teacher as a health promoter is the continuous improvement of knowledge and skills that contribute to the improvement of health – their own and their students’ and relatives’.

The conducted study proved that proper eating habits change with age. It was noticed that the consumption of breakfast and the frequency of fruit consumption correlated positively with the age of the respondents, while the consumption of fast food correlated negatively with it. The study conducted in Israel also confirmed that proper eating habits increased with age. Correct habits were demonstrated by 42% of the respondents aged 46–59 [25].

Studies on children and school staff in Australia showed the importance of improved nutrition. For over 10 years, the predominance of incorrect eating behaviors was observed, especially among teachers, which resulted in, among others, smoking and overweight [16].

Authors' own study discovered the relation between gender and health behaviors. Men (63.16%) consumed statistically significantly more meals than women (29.60%), and declared a higher consumption of red meat (several times a week) (52.63%). Male teachers more often declared taking up physical activity (36.84%) and spending free time more actively than women (3.61%). In the study by C. Caussidier et al. on pro-health behaviors of candidates for teachers, women were relatively more likely than men to follow the principles of a healthy lifestyle and prevention [31]. On the other hand, in the study of Chan et al. carried out among teachers, there was no relationship between gender and the tendency to display pro-health behaviors; only the occurrence of preventive behaviors among female teachers was confirmed [11].

One of the factors impacting human health is physical activity. The level of physical activity among teachers was relatively low. According to study conducted by Laaksonen, teachers spent only 2 to 4 hours a week on physical activity [45]. According to the World Health Organization, an adult should spend at least 1 hour daily on physical activity [33]. Authors' own study also presented a problem related to low physical activity of teachers – 61.6%. The respondents engaged in physical activity for 1–3 hours a week, and the most common form of activity was walking – declared by 65.7% of the respondents. The results of the study indicated that men significantly more often declared undertaking physical activity on weekdays (36.84%).

A frequently discussed topic in the literature is the problem of using stimulants in adults, e.g., smoking and alcohol consumption. As shown by the study conducted by Goldberg et al., this was a problem that also affected teachers in France. 49.76% of the respondents admitted to smoking, while as many as 78.46% of the respondents reported regular (at least twice a week) consumption of alcohol [13]. However, the results of authors' own research showed that 7.58% of women and 10.53% of men smoked cigarettes, while 66.79% of women and 60.53% of men occasionally drank alcohol.

The problem of substance use by teachers was also widely studied in Australia and Canada. The percentage of teachers reaching for alcohol regularly (at least 3 times a week) was alarming. In Australia, alcohol was regularly consumed by 39.15% of teachers [16].

Using stimulants is a crucial problem not only from the point of view of the health of the respondents, but also in terms of teacher's role at school, i.e., a health promoter, guardian, mentor, and role model for the students [35, 42]. A study carried out in Spain found a link between teacher smoking on school premises and the impact on student use. It was found that a smoking teacher may have a stronger influence on the daily smoking of female students [34].

The results of the studies conducted by Laaksonen et al. and McLellan et al. confirmed the links between such demographic factors as gender, age, and years of experience and pro-health behaviors of teachers [16, 45]. Confronting that study with the results of authors' own study, it should be stated that in the group of respondents, eating habits changed with age: older respondents consumed fruit and vegetables more often, and avoided fast-food dishes.

The study focused primarily on the search for correlates of health behaviors among sociodemographic variables. Based on the conducted study, a specific structure of dependencies of the variables was found. The conducted analyses provided an extensive and very interesting material in the field of health behaviors of teachers and the correlates of these behaviors, especially since there are not many studies in this field in Poland and worldwide. Statistical analyses were used in the study, so that the margin of overinterpretation of the presented data could be minimized. Conclusions were drawn that showed the health attitude of teachers. These conclusions should be treated as a proposal for further analysis, especially given the fact that in the literature there are not many examples that would serve as a comparison. Bearing in mind the importance of health in the professional and personal lives of teachers, it is necessary to emphasize the need to deepen knowledge and design further studies on determinants and dependencies of teachers' health behaviors [46].

Conclusions

The conducted research allowed to present conclusions and practical implications: it was found that the significant factors determining the health behavior of the surveyed teachers were age and gender. In the study group, incorrect health behaviors prevailed, such as low physical activity, use of stimulants

(tobacco and alcohol), lack of systematic physical activity. The results of Inventory of Health-Related Behavior (IHB) indicated a slight advantage of the respondents with a 'low' and 'average' level of health behaviors in comparison to individuals with 'high' level. The Inventory of Health-Related Behavior (IHB) also helped distinguish individual categories of behaviors: eating habits, preventive behaviors, positive mental attitudes, and health practices, and indicated that the respondents' preventive behaviors had the strongest impact on their behavior and health.

The obtained results indicated the need to continue further research on health behaviors of primary school teachers. It is necessary not only to provide appropriate health education, but also to take corrective actions aimed at eliminating incorrect health behaviors among this professional group.

References

1. Bąk-Sosnowska M, Skrzypulec-Plinta V. Health behaviors, health definitions, sense of coherence, and general practitioners' attitudes towards obesity and diagnosing obesity in patients. *Arch Med Sci* 2017; 13(2): 433–440. <https://doi.org/10.5114/aoms.2016.58145>.
2. Gąska I, Sygit K, Cipora E et al. Assessment of the health behaviours and value-based health analysis of people aged 50+ who were hospitalized due to cardiovascular disease. *Int J Environ Res Public Health* 2021; 18(8): 4221. <https://doi.org/10.3390/ijerph18084221>.
3. Gąska I, Sygit K, Cipora E, Sygit M, Krakowiak J. Factors determining health behaviours of the 50+ population with cardiovascular diseases. *Ann Agric Environ Med* 2020; 27(1): 99–105. <https://doi.org/10.26444/aaem/118194>.
4. Graciano AMC, Cardoso NMM, Teixeira SA, Mattos FF, Gomes VE, Borges-Oliveira AC. Health promotion in Brazil: qualitative survey with primary school teachers. *Health Promot Int* 2019; 34(5): e28–e35. <https://doi.org/10.1093/heapro/day061>.
5. Kino S, Bernabé E, Sabbah W. Socioeconomic inequality in clusters of health-related behaviours in Europe: latent class analysis of a

- cross-sectional European survey. *BMC Public Health* 2017; 17(1): 497. <https://doi.org/10.1186/s12889-017-4440-3>.
6. Bartosiewicz A, Łuszczki E. Health and sedentary behaviors within Polish nurses: A cross-sectional study. *Nutrients* 2023; 15(6): 1312. <https://doi.org/10.3390/nu15061312>.
 7. Šulinskaitė K, Zagurskienė D, Blaževičienė A. Patients' health literacy and health behaviour assessment in primary healthcare: evidence from a cross-sectional survey. *BMC Prim Care* 2022; 23(1): 223. <https://doi.org/10.1186/s12875-022-01809-5>.
 8. Tokgozoglu L, Hekimsoy V, Costabile G, Calabrese I, Riccardi G. Diet, lifestyle, smoking. *Handb Exp Pharmacol* 2022; 270: 3–24. http://dx.doi.org/10.1007/164_2020_353.
 9. Vedovato TG, Monteiro I. Health conditions and factors related to the workability of teachers. *Ind Health* 2014; 52(2): 121–128. <https://doi.org/10.2486/indhealth.2013-0096>.
 10. Moore JR, Guerra ZC, Heydarian NM, Londoño T, Castro Y. Associations of positive and negative affect on health risk behaviors among Latinos. *Health Psychol* 2022; 41(2): 145–154. <https://psycnet.apa.org/doi/10.1037/hea0001165>.
 11. Chan ChMS, Kitzmann KM. Exploratory factor analysis: health perceptions of Chinese early childhood educators in Hong Kong. *Health Promot Int*. 2010; 25(4): 412–424. <https://doi.org/10.1093/heapro/daq031>.
 12. Ervasti J, Kivimäki M, Pentti J et al. Work-related violence, lifestyle, and health among special education teachers working in Finnish basic education. *J Sch Health* 2012; 82(7): 336–343. <http://dx.doi.org/10.1111/j.1746-1561.2012.00707.x>.
 13. Goldberg M, Chastang JF, Leclerc A et al. Socioeconomic, demographic, occupational, and health factors associated with participation in a long-term epidemiologic survey: a prospective study of the French GAZEL cohort and its target population. *Am J Epidemiol* 2001; 154(4): 373–384. <https://doi.org/10.1093/aje/154.4.373>.
 14. Hildt-Ciupińska K, Pawłowska-Cyprysiak K. Positive health behaviors and their determinants among men active on the labor market

- in Poland. *Am J Mens Health* 2020; 14(1): 1557988319899236. <https://doi.org/10.1177/1557988319899236>.
15. Klainin-Yobas P, He HG, Lau Y. Physical fitness, health behaviour and health among nursing students: A descriptive correlational study. *Nurse Educ Today* 2015; 35(12): 1199–1205. <https://doi.org/10.1016/j.nedt.2015.06.014>.
 16. McLellan L, Rissel C, Donnelly N, Bauman A. Health behaviour and the school environment in New South Wales, Australia. *Soc Sci Med* 1999; 49(5): 611–619. [https://doi.org/10.1016/s0277-9536\(99\)00136-7](https://doi.org/10.1016/s0277-9536(99)00136-7).
 17. Shurcke M, de Paz Nievies C. The impact of health and health behaviours on educational outcomes in high income countries: a review of the evidence. WHO Regional Office for Europe, Copenhagen, 2011. <https://apps.who.int/iris/handle/10665/345467>. Access: 05.06.2023.
 18. Gezmen-Karadağ M, Yildiran H, Köksal E, Öztürk Y. Schoolteachers' awareness about National Obesity Prevention Programs in Turkey. *Ecol Food Nutr* 2019; 58(5): 470–480. <https://doi.org/10.1080/03670244.2019.1617706>.
 19. González-Gross M, Meléndez A. Sedentarism, active lifestyle and sport: Impact on health and obesity prevention. *Nutr Hosp* 2013; 28(5): 89–98. <https://doi.org/10.3305/nh.2013.28.sup5.6923>.
 20. Morkevičius V, Norkus Z, Markevičiūtė J. Risky health behaviours and socioeconomic inequalities in European countries: new insights from European Social Survey. *Cent Eur J Public Health* 2020; 28(4): 251–259. <https://doi.org/10.21101/cejph.a6112>.
 21. Ng YM, Voo P, Maakip I. Psychosocial factors, depression, and musculoskeletal disorders among teachers. *BMC Public Health* 2019; 19(1): 234. <https://doi.org/10.1186/s12889-019-6553-3>.
 22. Vettori G, Bigozzi L, Vezzani C, Pinto G. The mediating role of emotions in the relations between beliefs and teachers' job satisfaction. *Acta Psychol* 2022; 226: 103580. <https://doi.org/10.1016/j.actpsy.2022.103580>.
 23. Dieteren CM, Brouwer WBF, van Exel J. How do combinations of unhealthy behaviors relate to attitudinal factors and subjective health among the adult population in the Netherlands? *BMC Public Health* 2020; 20(1): 441. <https://doi.org/10.1186/s12889-020-8429-y>.

24. Julin B, Willers C, Leksell J et al. Association between sociodemographic determinants and health outcomes in individuals with type 2 diabetes in Sweden. *Diabetes Metab Res Rev* 2018; 34(4): e2984. <https://doi.org/10.1002/dmrr.2984>.
25. Wilf-Miron R, Kittany R, Saban M, Kagan I. Teachers' characteristic predict students' guidance for healthy lifestyle: a cross-sectional study in Arab-speaking schools. *BMC Public Health* 2022; 22(1): 1420. <https://doi.org/10.1186/s12889-022-13795-5>.
26. Winding TN, Aust B, Andersen LPS. The association between pupils' aggressive behaviour and burnout among Danish school teachers – the role of stress and social support at work. *BMC Public Health* 2022; 22(1): 316. <http://dx.doi.org/10.1186/s12889-022-12606-1>.
27. Naing KM, Htun YM, Tun KM, Win TT, Lin H, Sein TT. Involvement of high school teachers in Health Promoting School program in selected township, Yangon Region, Myanmar: A cross-sectional mixed methods study. *PLoS ONE* 2022; 17(6): e0270125. <https://doi.org/10.1371/journal.pone.0270125>.
28. Laurence EC, Volmink J, Esterhuizen TM, Dalal S, Holmes MD. Risk of cardiovascular disease among teachers in Cape Town: Findings of the South African PaCT pilot study. *S Afr Med J* 2016; 106(10): 996–1001. <https://doi.org/10.7196/samj.2016.v106i10.10869>.
29. Kedir S, Hassen K, Melaku Y, Jemal M. Determinants of overweight and/or obesity among school adolescents in Butajira Town, Southern Ethiopia. A case-control study. *PLoS One* 2022; 17(6): e0270628. <https://doi.org/10.1371/journal.pone.0270628>.
30. Chong EY, Chan AH. Subjective health complaints of teachers from primary and secondary schools in Hong Kong. *Int J Occup Saf Ergon* 2010; 16(1): 23–39. <https://doi.org/10.1080/10803548.2010.11076825>.
31. Caussidier C, El Hage F, Munoz F et al. In search of a health education model: teachers' conceptions in four Mediterranean countries. *Glob Health Promot* 2011; 18(4): 5–15. <https://doi.org/10.1177/1757975911422962>.
32. Alcantara MA, Medeiros AM, Claro RM, Vieira MT. Determinants of teachers' work ability in basic education in Brazil: Educatel Study 2016. *Cad*

- Saude Publica 2019; 6(35): e00179617. <https://doi.org/10.1590/0102-311X00179617>.
33. Abi Nader P, Hilberg E, Schuna JM, John DH, Gunter KB. Association of teacher-level factors with implementation of classroom-based physical activity breaks. *J Sch Health* 2019; 89(6): 435–443. <https://doi.org/10.1111/josh.12754>.
 34. Escario JJ, Wilkinson AV. Visibility of smoking among school-teachers in Spain and associations with student smoking: a cross-sectional study. *BMJ Open* 2018; 5(8): e018736. <http://dx.doi.org/10.1136/bmjopen-2017-018736>.
 35. Gadais T, Caron T, Ayoub MB, Karelis A, Nadeau L. The role of the teacher in the implementation of a school-based intervention on the physical activity practice of children. *Int J Environ Res Public Health* 2020; 17(19): 7344. <https://doi.org/10.3390/ijerph17197344>.
 36. Harris MA, The relationship between physical inactivity and mental wellbeing: Findings from a gamification-based community-wide physical activity intervention. *Health Psychol Open* 2018; 5(1): 205–209. <https://doi.org/10.1177/2055102917753853>.
 37. Hlad' P, Dosedlová J, Harváňková K et al. Work ability among upper-secondary school teachers: examining the role of burnout, sense of coherence, and work-related and lifestyle factors. *Int J Environ Res Public Health* 2020; 17: 9185. <https://doi.org/10.3390/ijerph17249185>.
 38. Ibrahim RZAR, Zalam WZM, Foster B et al. Psychosocial work environment and teachers' psychological well-being: The moderating role of job control and social support. *Int J Environ Res Public Health* 2021; 18: 7308. <https://doi.org/10.3390/ijerph18147308>.
 39. Kavita K, Hassan NC. Work stress among teachers: A comparison between primary and secondary school teachers. *Int J Acad Res Progress Educ and Dev* 2018; 7(4): 60–66. <http://dx.doi.org/10.6007/IJARPED/v7-i4/4802>.
 40. Scheuch K, Haufe E, Seibt R. Teachers' health. *Dtsch Arztebl Int* 2015; 15(20): 347–356. <http://dx.doi.org/10.3238/arztebl.2015.0347>.

41. Juczyński Z. Narzędzia pomiaru w promocji i psychologii zdrowia. *Przegląd psychologiczny* 1999; 42(4): 43–56.
42. Dias DF, Loch MR, González AD, Andrade SM, Mesas AE. Insufficient free-time physical activity and occupational factors in Brazilian public school teachers. *Rev Saude Publica*. 2017; 51–68. <https://doi.org/10.1590/S1518-8787.2017051006217>.
43. Kupcewicz E, Szypulska A, Doboszyńska A. Positive orientation as a predictor of health behavior during chronic diseases. *Int J Environ Res Public Health* 2019; 16: 3408. <https://doi.org/10.3390/ijerph16183408>.
44. Pulling Kuhn A, Kim E, Lane HG et al. Associations between elementary and middle school teachers' physical activity promoting practices and teacher- and school-level factors. *Int J Behav Nutr Phys Act* 2021; 18(1): 66. <https://doi.org/10.1186/s12966-021-01129-4>.
45. Laaksonen, M, Prättälä R, Helasoja V, Uutela A, Lahelma E. Income and health behaviours. Evidence from monitoring surveys among Finnish adults. *J Epidemiol Community Health*. 2003; 57(9): 711–717. <https://doi.org/10.1136%2Fjech.57.9.711>.
46. Kmieć K. Zachowania zdrowotne nauczycieli w kontekście uwarunkowań socjodemograficznych (rozprawa doktorska – maszynopis 2022). Akademia Kaliska im. Prezydenta Stanisława Wojciechowskiego.