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## Assessment of the impact of lifestyle and psychosocial working conditions on older employees' work ability

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**Objective.** The purpose of this article was to assess the impact of selected elements of lifestyle, psychosocial working conditions and general mental health on older employees' ability to work. **Methods.** Employees ( $N = 1067$ ) aged 50–65 years ( $M 54.8$ ,  $SD 3.95$ ) responded to a questionnaire on demographics, lifestyle characteristics, general mental health (general health questionnaire), psychosocial job characteristics (job content questionnaire) and work ability (work ability index [WAI]). A logistic regression model was used to assess the impact of the selected factors on work ability. **Results.** Older employees were characterized by good (44.4%) and moderate (36.4%) work ability. The average WAI scores were significantly higher among employees who did not smoke, consumed the recommended daily intake of vegetables, drank enough water, ate breakfast every morning, cut down on sweets and were on a vegetarian diet. Good physical (no sick leave) and mental health, high level of job control, low job insecurity and use of over-the-counter drugs were found to be the strongest predictors of WAI scores. **Conclusions.** The results of the research indicate that most of the determinants of work ability identified at work are impacted, thus giving the opportunity to conduct some occupational health and preventive programmes in the workplace.

**Keywords:** work ability; work ability index; lifestyle; psychosocial working conditions; ageing employees

### 1. Introduction

The problem of an ageing population is the subject of many discussions. In Poland and in many European countries, an inverted population pyramid can be observed. This is a demographic trend showing the increasing prevalence of the elderly in the general population compared to the young. According to Eurostat data, Poland has a very low rate of occupational activity among people aged 50+ years compared to other European countries. Furthermore, it is estimated that, in 2020, people aged over 60 years will constitute nearly 25% of the Polish population [1]. The latest statistics prepared by the Central Statistical Office of Poland (GUS) also show that, by 2050, the proportion of older people will increase by 5.4 million across the country and the percentage of older people will exceed 30% in rural areas and 35% in cities [2].

The fundamental condition that enables people to work is work ability. Work ability is defined as the employees' ability to perform their job, taking into consideration their health status, mental resources and job demands [3]. Maintaining good work ability up to retirement age depends on keeping the optimum balance between employee's skills that may change over the years and job demands that should take these changes into account. In the literature,

age often appears to be a factor that affects the ability to perform work [4–6]. This is closely related to the occurrence of age-related structural and functional changes in the human body as well as an increased incidence of many chronic diseases.

There are many psychosocial factors in the workplace environment that may cause imbalance between job demands and employees' ability to meet them. These include, e.g., high job demands, low level of control and job satisfaction, lack of support from co-workers and management, job insecurity, time pressure and repetitive tasks performed at a fast pace [7,8].

Non-occupational factors affecting human health and work ability include lifestyle and health-promoting behaviours [4,9,10]. A healthy lifestyle is important at every stage of life; it is a myth that at a certain age it is too late to take health-promoting action. The most important factors affecting such indicators as morbidity, mortality or quality of life include smoking, alcohol consumption, inadequate nutrition, abdominal obesity and physical inactivity [11,12].

The purpose of this article is to assess the impact of selected elements of lifestyle and psychosocial working conditions on older employees' ability to work. The survey results will be used to: (a) assess the impact of

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selected elements of lifestyle, psychosocial working conditions and general mental health on older employees' ability to work; (b) put forward more specific recommendations for health-promoting programmes aimed at this group of workers.

## 2. Materials and methods

This cross-sectional study was conducted on a representative sample of employees aged 50+ years. Respondents were selected randomly. The survey was anonymous and voluntary. For the quantitative sample ( $N = 1067$ ), quota and purposive sampling were used in which the quotas were determined by age, gender and PKD (Polish Classification of Activity) sector section [13]. The selection of the types of economic activity was determined by a GUS study, which clearly indicates which sections include the biggest number of employees over 50 years old [14]. The research was conducted among people employed in manufacturing, administrative and support service activities, construction, retail trade and human health and social work activities. The sample of  $N = 1067$  (at a confidence level of 0.95, estimated fraction of 0.5 and maximal error of 0.03) was chosen from the population of  $N = 4153$ , the number of employees aged 50+ years in Poland in 3.12.2011r [15]. The survey was conducted by an interviewing company from July to September 2014. Self-reported questionnaires were used. A brief overview of the survey methods used is provided in the following.

### 2.1. Assessment of work ability

Work ability was assessed with the subjective work ability index (WAI) [16]. The questionnaire consists of seven questions covering issues such as: (a) current ability to work compared to the best in life; (b) work ability in relation to the physical and mental demands of the job; (c) the number of reported diagnosed diseases; (d) estimated impairment due to health status; (e) sick leave over the last 12 months; (f) self-reported work ability within the next 2 years; (g) mental resources. The WAI score can be between 7 and 49: 7–27 points, poor; 28–36 points, moderate; 37–43 points, good; 44–49 points, excellent.

### 2.2. Assessment of lifestyle and health-promoting behaviours

The survey used to assess the lifestyle and health-promoting behaviours of employees was developed for the purpose of this article. The questionnaire consists of two parts. The first part contains general questions about gender, age, education, family status, total length of service, length of service at the current position and anthropometric data such as height, weight and body mass index (BMI). The second part of the questionnaire contains questions about the respondents' lifestyle: self-reported health status,

nutrition, smoking, alcohol, coffee and drug consumption, and physical activity.

### 2.3. Assessment of psychosocial working conditions

Psychosocial working conditions were assessed with the job content questionnaire (JCQ) by Robert Karasek [17]. This questionnaire measures three variables that determine stress levels in the workplace: psychological demands (nine items), decision latitude (nine items) and social support (eight items). Psychological demands refer to psychological job demands that determine the level of mental strain and concentration required to perform tasks. Decision latitude is composed of two sub-scales: skill discretion (six items) and decision authority (three items). Social support refers to support received at work and consists of two components: supervisor support (four items) and co-worker support (four items). For the purpose of this survey, the scale of job insecurity referring to certainty about current employment and future career opportunities was also used.

### 2.4. General mental health

The survey used questions based on the general health questionnaire (GHQ-12) by Goldberg to measure general mental health. In Poland, the GHQ was adapted by Makowska and Merez [18]. The questionnaire consists of 12 questions about mental health with four categories of responses for each: better than usual, just as usual, worse than usual and much worse than usual. The GHQ 0–0–1–1 score (range from 0 to 12 points) was used to develop the results; the higher the score, the higher the severity of the symptoms.

### 2.5. Statistical analysis

Statistical analysis was performed using SPSS version 15.0. The significance level was set at  $p \leq 0.05$ . Statistical analysis included the preparation of descriptive statistics of the survey group (average values and standard deviation) and verification of the significance of differences between the individual measurable variables (Mann–Whitney  $U$  test). The logistic regression model was used to assess the impact of selected elements of lifestyle, psychosocial working conditions and general mental health on the respondents' work ability. Work ability was marked either 0 (poor and moderate) or 1 (good and excellent).

## 3. Results

### 3.1. Survey population

The survey covered a group of 1067 people aged 50+ years. The characteristics of the surveyed female and male respondents are presented in Table 1. Men accounted

Table 1. Characteristics of the study group.

| Characteristic   | Women (%) | Men (%) | Total (%) |
|--|-----------|---------|-----------|
| <b>Age</b>   |           |         |           |
| 50–54 years  | 58.0      | 49.0    | 53.0      |
| 55–59 years  | 32.0      | 35.6    | 34.0      |
| 60–64 years  | 8.1       | 13.4    | 11.1      |
| ≥65 years  | 1.9       | 2.0     | 2.0       |
| <b>Family status</b>                                   |           |         |           |
| Married  | 58.3      | 64.5    | 61.8      |
| In civil partnership                                   | 13.9      | 12.8    | 13.3      |
| Single   | 15.2      | 10.8    | 12.7      |
| Widow/widower  | 12.6      | 11.9    | 12.2      |
| <b>Education</b>                                       |           |         |           |
| Primary  | 8.4       | 12.3    | 10.6      |
| Upper secondary  | 55.6      | 60.2    | 58.2      |
| Tertiary   | 35.4      | 25.3    | 29.7      |
| Vocational   | 0.0       | 2.2     | 1.5       |
| <b>Duration of employment in total</b>                 |           |         |           |
| <20 years  | 12.7      | 4.2     | 8.0       |
| 20–30 years  | 51.1      | 43.3    | 46.7      |
| >30 years  | 36.2      | 52.5    | 45.3      |
| <b>Duration of employment in the present workplace</b> |           |         |           |
| <5 years   | 33.8      | 22.8    | 27.6      |
| 5–10 years   | 19.6      | 19.6    | 19.6      |
| 10–15 years  | 12.0      | 11.3    | 11.6      |
| 15–20 years  | 13.5      | 10.3    | 11.7      |
| >20 years  | 21.1      | 6.1     | 29.5      |
| <b>Sector of employment</b>                            |           |         |           |
| Administration   | 34.1      | 23.4    | 28.1      |
| Construction   | 1.9       | 23.6    | 14.1      |
| Trade  | 23.7      | 13.7    | 18.1      |
| Healthcare and social work                             | 21.5      | 4.3     | 11.9      |
| Manufacturing  | 18.8      | 34.9    | 27.8      |
| <b>Work system</b>                                     |           |         |           |
| One-shift  | 51.5      | 55.5    | 53.8      |
| Two-shift  | 32.5      | 23.7    | 27.6      |
| Three-shift  | 8.3       | 8.0     | 8.2       |
| Task-based   | 1.1       | 3.5     | 2.4       |
| Flexible working hours                                 | 6.6       | 9.2     | 8.1       |
| <b>Subjective assessment of strenuousness of work</b>  |           |         |           |
| Light  | 24.7      | 16.8    | 20.2      |
| Fairly hard  | 64.6      | 64.0    | 64.3      |
| Hard and very hard                                     | 10.7      | 19.3    | 15.5      |
| <b>BMI</b>   |           |         |           |
| Underweight  | 1.7       | 0.3     | 0.1       |
| Normal   | 56.9*     | 25.9    | 39.5      |
| Overweight   | 31.1      | 57.7*   | 46.0      |
| Obese class I  | 8.4       | 15.6    | 12.4      |
| Obese class II   | 1.5       | 0.5     | 0.9       |
| Obese class III  | 0.4       | 0.0     | 0.2       |

\*Statistically significant differences between women and men ( $p \leq 0.05$ ).

Note: For BMI: underweight,  $\leq 18.5$ ; normal weight, 18.5–24.9; overweight, 25.0–29.9; obese class I, 30.0–34.9; obese class II, 35.0–39.9; obese class III, 40.0. BMI = body mass index.

for 56% of the whole group. The average age of the respondents was 54.8 years ( $SD$  3.95). Female respondents were slightly younger than male respondents. Men were more

often married or in civil partnerships than women. Much more women had college degrees than men. Women also had shorter working lives than men. Men were most often employed in manufacturing and construction, and women in administration and commerce. The respondents worked mainly in a one-shift system (53.8%) and a two-shift system (27.6%). Most men and women described their work as moderately hard. Twice as many men than women rated their work as hard and very hard. Men were more likely to be overweight and obese compared to women whose BMI was normal ( $p \leq 0.05$ ).

### 3.2. Work ability

The analysis of subjectively perceived work ability measured with the WAI shows that the respondents demonstrated good (44.4%), moderate (36.4%) and excellent (13.4%) work ability. Nearly 6% of the respondents demonstrated poor work ability. Women were more likely than men to rate their ability to work slightly higher (*ns*). A statistically significant relationship was observed between work ability and the type of work performed and educational attainment. White-collar workers were more likely than blue-collar workers to demonstrate excellent work ability. In the study group, people with primary education were significantly more likely than those with higher education to have poor work ability ( $p \leq 0.05$ ) (Table 2).

As for work ability indicator elements, men slightly overestimated their mental resources and estimated impairment due to health status; they were also less often on sick leave during the past year. Women, on the other hand, rated their current work ability highly. As the results of the survey show, almost half of the respondents were not on sick leave over the past year. Among the respondents who had taken sick leave, 30.5% were on sick leave for up to no more than 9 days and 15.4% of them were off sick for 10–24 days (Table 3).

### 3.3. Lifestyle

Table 4 presents the selected lifestyle elements in the survey group of men and women. Men were significantly less likely to consume vegetables and fruit, and their meals were richer in saturated fatty acids and cholesterol; furthermore, they drank far more alcohol compared to the women. The survey results also show that men were more likely to drink vodka and beer than female survey respondents (almost six times and over two times more, respectively); they also consumed significantly more alcohol per serving. Women, on the other hand, were more inclined to assess their diet as healthy, they cut down on sweets, avoided snacks between meals, drank coffee more often, smoked less cigarettes and rarely took over-the-counter drugs (OTC). In the last three areas (coffee, cigarettes and OTC), the differences were not statistically significant. In

Table 2. Assessment of the work ability index regardless of gender, type of work, sector and education [16].

| Characteristic of study group | Work ability index (%) |          |      |           |
|-------------------------------|------------------------|----------|------|-----------|
|                               | Poor                   | Moderate | Good | Excellent |
| Gender                        |                        |          |      |           |
| Women                         | 5.9                    | 36.4     | 44.4 | 13.4      |
| Men                           | 6.5                    | 39.4     | 41.6 | 12.5      |
| Type of work                  |                        |          |      |           |
| Mental                        | 1.9                    | 25.3     | 48.4 | 24.4      |
| Physical                      | 9.2                    | 43.4     | 39.3 | 8.2*      |
| Mixed                         | 5.8                    | 38.2     | 46.5 | 9.5       |
| Sector of employment          |                        |          |      |           |
| Administration                | 1.4                    | 28.4     | 46.3 | 24.0      |
| Construction                  | 12.4                   | 33.8     | 45.5 | 8.3       |
| Trade                         | 8.5                    | 45.0     | 37.6 | 9.0       |
| Healthcare and social work    | 2.4                    | 35.7     | 51.6 | 10.3      |
| Manufacturing                 | 7.2                    | 40.4     | 43.2 | 9.2       |
| Education                     |                        |          |      |           |
| Primary                       | 15.7**                 | 33.3     | 40.7 | 10.2      |
| Secondary                     | 13.5                   | 83.8     | 81.2 | 21.3      |
| Tertiary                      | 2.8                    | 28.9     | 50.1 | 18.3      |
| Vocational                    | 6.3                    | 25.0     | 56.3 | 12.5      |

\*Statistically significant differences between employees performing mental and physical work ( $p \leq 0.05$ ).

\*\*Statistically significant differences between employees with primary and tertiary education.

Note: Poor,  $\leq 27$  points; moderate, 28–36 points; good, 37–43 points; excellent, 44–49 points.

both groups, employees demonstrated a low level of physical activity, demonstrated good health and ate three or four meals a day. Male survey respondents were more physically active than women: the most frequent types of physical activity included walking and cycling (Table 4).

### 3.4. Relationship between work ability and lifestyle

In order to verify the relationship between work ability and certain aspects of lifestyle, the respondents were examined using the Mann–Whitney  $U$  test (Table 5). Based on the analysis results, the average WAI scores were significantly higher among employees who did not smoke, consumed the recommended daily intake of vegetables, drank enough water, ate breakfast every morning, cut down on sweets and were on a vegetarian diet. The highest values of WAI scores were observed among employees who were on a vegetarian diet ( $37.1 \pm 5.4$ ) and the lowest were among people who did not eat breakfast every morning ( $33.1 \pm 6.5$ ).

### 3.5. Psychosocial job demands and general mental health

The results of the psychosocial job demands and the general mental health analysis (GHQ-12) are summarized in

Table 3. Elements of the work ability index in the study groups of men and women [16].

| Work ability index  | Men            | Women          |
|---|----------------|----------------|
| Current ability to work compared to the best in life, $M \pm SD$                      | $7.4 \pm 1.4$  | $7.5 \pm 1.55$ |
| Ability to work in relation to the requirements of the current profession, $M \pm SD$ |                |                |
| Ability to cope with physical effort  | $3.8 \pm 0.9$  | $3.8 \pm 0.9$  |
| Ability to cope with mental effort  | $3.9 \pm 0.85$ | $3.9 \pm 0.91$ |
| Estimated impairment due to health status, $M \pm SD$                                 | $5.1 \pm 1.01$ | $5.0 \pm 1.05$ |
| Sick leave over the past 12 months, % of people                                       |                |                |
| 100–365 days  | 0.8            | 0.9            |
| 25–99 days  | 3.4            | 3.9            |
| 10–24 days  | 14.9           | 16.1           |
| $\leq 9$ days   | 29.1           | 32.1           |
| Not going on sick leave   | 51.8           | 47.1           |
| Self-reported work ability within the next 2 years, $M \pm SD$                        | $5.1 \pm 1.9$  | $5.0 \pm 1.9$  |
| Mental resources, $M \pm SD$  | $2.9 \pm 0.8$  | $2.8 \pm 0.8$  |

Table 6. The results of the former were consistent in both survey groups. Women reported greater control over important work-related decisions and demonstrated less job insecurity. Men, in turn, had greater levels of social support compared to women. The results did not, however, significantly differentiate the groups.

The average results for the GHQ-12 for male and female survey respondents are presented in Table 6. The respondents did not differ significantly, and the results obtained are average for the working population in Poland [18].

### 3.6. Logistic regression analysis

Table 7 summarizes the logistic regression analysis of the factors that affected work ability in this study. The findings for age, gender, family status, physical activity, frequency of meals, consumption of fruit and vegetables, alcohol consumption, smoking, drug use and leisure were not significant.

The logistic regression analysis showed significant associations between WAI ( $>37$ ) and good health (no sick leave) (odds ratio [OR] = 2.16, 95% confidence interval [CI] [1.79, 2.59]), an increased level of control over working processes (OR = 1.03, 95% CI [1.0, 1.05]) and use of OTC (OR = 1.10, 95% CI [1.01, 1.19]). On the other hand, the chance of high WAI scores was decreased by deterioration of the mental health of employees (OR = 0.90, 95% CI [0.86, 0.93]) and increased job insecurity (OR = 0.87, 95% CI [0.81, 0.93]).

Table 4. Selected elements of lifestyle in the study groups of men and women.

| Selected element of lifestyle                              |  | Men (%) | Women (%) |
|--|--|---------|-----------|
| Health status  | Self-reported health status  |         |           |
|  | Very good  | 12.2    | 13.2      |
|  | Good   | 49.5    | 47.3      |
|  | Neither good nor poor  | 33.3    | 31.1      |
|  | Poor   | 4.5     | 7.7       |
|  | Very poor  | 0.5     | 0.6       |
| Diet   | Self-reported diet   |         |           |
|  | Healthy  | 19.9    | 29.0*     |
|  | Rather healthy   | 36.4    | 57.1      |
|  | Rather unhealthy   | 15.6    | 12.4      |
|  | Unhealthy  | 1.2     | 1.5       |
|  | Number of meals per day  |         |           |
|  | 1–2  | 8.0     | 9.4       |
|  | 3  | 43.5    | 37.7      |
|  | 4  | 37.0    | 41.4      |
|  | ≥5   | 11.5    | 11.5      |
|  | Amount of fruit consumed daily (one serving of fruit = one medium apple)                                     |         |           |
|  | Not eating fruit   | 17.7*   | 10.0      |
|  | 1 serving  | 51.3    | 42.3      |
|  | 2–3 servings   | 27.1    | 41.9*     |
|  | ≥4 servings  | 3.8     | 5.8       |
|  | Amount of vegetables consumed daily (one serving of vegetables is about as much as you can fit into one cup) |         |           |
|  | Not eating vegetables  | 13.0*   | 7.4       |
|  | 1 serving  | 46.2    | 46.0      |
|  | 2–3 servings   | 35.2    | 41.2      |
|  | ≥4 servings  | 5.6     | 5.4       |
|  | Eating breakfast every morning   | 75.5    | 75.4      |
|  | Cutting down on sweets   | 65.7*   | 50.0      |
| Avoiding snacks between meals                              | 49.5   | 59.8*   |           |
| Eating meals rich in saturated fatty acids and cholesterol | 73.3*  | 63.0    |           |
| Physical activity  | Frequency of physical activity   |         |           |
|  | Daily  | 13.9    | 17.1      |
|  | A few times/week   | 27.1    | 27.8      |
|  | Rarely   | 39.6    | 32.9      |
|  | Hardly ever  | 13.5    | 16.7      |
|  | Never  | 5.9     | 5.6       |
|  | Type of physical activity  |         |           |
|  | Walking  | 53.4    | 66.9      |
|  | Jogging  | 20.1    | 12.2      |
|  | Dancing  | 6.6     | 7.6       |
|  | Cycling  | 47.1    | 43.3      |
|  | Gymnastics   | 6.3     | 9.8       |
| Swimming   | 14.0   | 11.1    |           |
| Other  | 5.9  | 4.2     |           |
| Smoking  | Smoking  | 30.8    | 23.0      |
|  | Quantity of cigarettes/day   | 15.4    | 11.9      |
|  | Self-reported nicotine addiction   |         |           |
|  | Very strong  | 22.6*   | 11.0      |
|  | Strong   | 53.3    | 43.2      |
|  | Weak   | 19.6    | 39.0      |
|  | Very weak  | 4.5     | 6.8       |
| Alcohol consumption  | Alcohol consumption  | 56.9*   | 38.0      |
|  | Frequency of alcohol consumption   |         |           |
|  | 1–2 times/month  | 41.2    | 75.7      |
|  | 1–2 times/week   | 44.2    | 21.5      |
|  | Several times/week (but not daily)   | 10.1    | 2.3       |

(Continued)

Table 4. Continued.

| Selected element of lifestyle       |   | Men (%) | Women (%) |
|-------------------------------------|---|---------|-----------|
|                                     | Daily   | 4.5     | 0.6       |
|                                     | The number of standard drinks consumed on a one-off basis |         |           |
|                                     | ≤2  | 36.6    | 76.4      |
|                                     | >4  | 50.7    | 22.5      |
|                                     | >6  | 10.3*   | 1.1       |
|                                     | ≥7  | 2.4     | 0.0       |
|                                     | Type of alcohol consumed                                  |         |           |
|                                     | Beer  | 74.7*   | 34.3      |
|                                     | Wine  | 22.4    | 47.8      |
|                                     | Vodka   | 42.4*   | 7.3       |
|                                     | Cocktails   | 14.4    | 27.5      |
|                                     | Liqueur   | 1.8     | 5.1       |
| Coffee consumption                  | Coffee consumption  | 63.5    | 70.4      |
|                                     | Number of cups/day  | 2.6     | 2.4       |
| Use of over-the-counter drugs (OTC) | Frequency of use of OTC                                   |         |           |
|                                     | A few times/week  | 7.7     | 8.2       |
|                                     | Once/week   | 23.0    | 15.7      |
|                                     | Several times/month                                       | 16.3    | 26.1      |
|                                     | Once/month  | 16.3    | 16.4      |
|                                     | Several times/year  | 10.9    | 11.0      |
|                                     | Less often  | 10.9    | 9.5       |
|                                     | Not apply   | 14.8    | 13.1      |

\*Statistically significant differences between men and women ( $p \leq 0.05$ ).

Table 5. Relationship between the work ability index (WAI) and selected elements of lifestyle for employees aged 50+ years (Mann–Whitney  $U$  test).

| Selected element of lifestyle  | Results                   |                 |        |           |
|--|---------------------------|-----------------|--------|-----------|
|  | $N$ of WAI ( $M \pm SD$ ) |                 | $Z$    | $p$       |
|  | Yes                       | No              |        |           |
| Eating at least 3 meals a day (yes/no)                                     | 458(35.8 ± 6.4)           | 439(35.4 ± 6.8) | -1.158 | <i>ns</i> |
| Eating at least 3 servings of fruit a day (yes/no)                         | 338(35.0 ± 7.1)           | 559(35.8 ± 6.4) | 0.497  | <i>ns</i> |
| Eating at least 4 servings of vegetables a day (yes/no)                    | 50(37.3 ± 5.3)            | 847(35.5 ± 6.7) | -1.994 | <0.046    |
| Drinking more than 2 L of water a day (yes/no)                             | 689(35.4 ± 6.5)           | 208(36.3 ± 7.0) | -2.226 | <0.024    |
| Eating breakfast every morning (yes/no)                                    | 680(36.4 ± 6.5)           | 217(33.1 ± 6.5) | 6.137  | <0.000    |
| Cutting down on sweets (yes/no)  | 509(36.3 ± 6.1)           | 388(34.6 ± 7.1) | 3.305  | <0.001    |
| Carbohydrate-rich diet (yes/no)  | 697(35.5 ± 6.9)           | 200(35.7 ± 5.3) | -0.206 | <i>ns</i> |
| Meals rich in saturated fatty acids and cholesterol (yes/no)               | 635(35.4 ± 6.9)           | 262(36.0 ± 5.8) | -1.128 | <i>ns</i> |
| Protein-rich diet (yes/no)   | 723(35.5 ± 6.9)           | 174(36.0 ± 5.5) | -1.147 | <i>ns</i> |
| Vegetarian diet (yes/no)   | 106(37.1 ± 5.4)           | 791(35.4 ± 6.8) | 2.434  | <0.015    |
| Drinking coffee (yes/no)   | 612(35.4 ± 7.0)           | 285(36.0 ± 5.7) | -1.193 | <i>ns</i> |
| Smoking (yes/no)   | 245(34.7 ± 6.8)           | 652(35.9 ± 6.5) | -2.358 | <0.018    |
| Drinking more than 2 standard alcoholic drinks on a one-off basis (yes/no) |                           |                 |        |           |
| Women  | 31(34.7 ± 6.2)            | 358(35.2 ± 7.1) | 0.138  | <i>ns</i> |
| Men  | 184(35.9 ± 6.1)           | 324(35.8 ± 6.0) | 0.314  | <i>ns</i> |

#### 4. Discussion

The survey on work ability covered a representative group of employees aged 50+ years ( $N = 1067$ ). More than half of the respondents were 54 years old and almost 37% of them were younger than 59 years old. Men accounted for 56% of the whole group. The level of ability to work in the group was good. It should be noted, however, that people

assessing their ability to work were professionally active and usually rated their health as good and very good. The data obtained show that white-collar workers were more likely than blue-collar workers to demonstrate excellent work ability, whereas people with primary education were significantly more likely than those with higher education to have poor work ability.

Table 6. Psychosocial job demands [17] and general mental health (GHQ-12) [18] regardless of gender.

| Variable                  |       | <i>M</i> ± <i>SD</i> | Range |
|---------------------------|-------|----------------------|-------|
| Job control               | Women | 60.6 ± 9.5           | 24–88 |
|                           | Men   | 60.4 ± 9.4           | 26–92 |
| Psychological job demands | Women | 29.9 ± 4.4           | 16–46 |
|                           | Men   | 29.9 ± 4.2           | 16–43 |
| Job insecurity            | Women | 6.1 ± 2.3            | 3–16  |
|                           | Men   | 6.4 ± 2.5            | 3–16  |
| Social support            | Women | 24.1 ± 7.5           | 9–48  |
|                           | Men   | 24.7 ± 8.0           | 11–48 |
| GHQ-12                    | Women | 11.0 ± 4.0           | 0–29  |
|                           | Men   | 10.0 ± 4.0           |       |

Note: GHQ-12 = general health questionnaire.

Table 7. Results of logistic regression analysis for the work ability index.

| Variable                    | Univariate analysis | Logistic regression model |              |
|-----------------------------|---------------------|---------------------------|--------------|
|                             | <i>p</i>            | OR                        | 95% CI       |
| Good health (no sick leave) | <0.000              | 2.16                      | [1.79, 2.59] |
| Mental health (GHQ-12)      | <0.000              | 0.90                      | [0.86, 0.93] |
| Job control                 | <0.0003             | 1.03                      | [1.01, 1.05] |
| Job insecurity              | <0.0000             | 0.87                      | [0.81, 0.93] |
| Use of OTC                  | <0.0254             | 1.10                      | [1.01, 1.19] |

Note: Beyond the model variables: age, gender, family status, physical activity, frequency of meals, consumption of fruit and vegetables, alcohol consumption, smoking, drug use and leisure. CI = confidence interval; GHQ-12 = general health questionnaire; OR = odds ratio; OTC = over-the-counter drugs.

Our results are therefore consistent with the results of many surveys on the basis of which it can be concluded that people with college diplomas and white-collar workers demonstrate higher levels of work ability [6,10,19–21]. Monteiro et al. [5], who assessed professional and non-professional factors affecting Brazilian workers' ability to work, obtained similar results. The logistic regression analysis of these data show that the deterioration of work ability was statistically significantly influenced by the employees' age (50+ years), lack of college diploma and long seniority. On the other hand, non-professional factors such as physical activity, household activities or BMI proved statistically insignificant [5]. The results of an 11-year survey conducted by Finnish researchers also showed that factors most adversely affecting work ability include age (over 51 years old) and work responsibilities [22].

Data from numerous literature sources indicate that men and women have different approaches to taking care of their health and to unhealthy behaviours such as smoking, alcohol consumption and healthy diet [23,24]. Women's

smoking prevalence rates are lower than men's. Furthermore, men are also more often addicted to nicotine and smoke more cigarettes a day [25,26]. Men are also more likely than women to drink and abuse alcohol. They consume it in larger quantities and more often, and they are also inclined to drink strong alcoholic beverages [26–28]. It is more difficult for men to maintain normal body weight [29] and follow the principles of a healthy diet [25,30]. Our results fully confirm those obtained by all of the aforementioned researchers. Among male respondents, the proportion of overweight and obese men, who smoke many cigarettes a day and consider themselves highly addicted smokers, was higher than women. Men reported eating significantly less vegetables and fruit, their meals were richer in saturated fatty acids and cholesterol, and they also drank alcohol more often than female survey respondents. The survey results also show that men were 11 times more likely to drink vodka, and consume significantly more per serving than women. Men were more likely to engage in physical activity than women but the type of activity, its intensity and the frequency were insufficient. The results are therefore consistent with many reports on physical activity among Poles; according to these reports, only a small percentage of Poles exercise regularly [31,32].

The logistic regression analysis results show that work ability was statistically significantly affected by few variables. Work ability was greatly determined by physical and mental health and working conditions such as the level of job control and job insecurity. The statistically significant influence of OTC on work ability came as a great surprise to the authors but most individual and lifestyle factors proved statistically insignificant.

An improved physical and mental condition of employees has a positive impact on increasing their work ability, which seems understandable. According to the literature, health is very often reported to be one of the most important factors to affect the ability to work. For the purpose of this survey, the GHQ-12 was used to assess the overall psychological well-being, while no sick leave was considered an indicator of good physical condition. The results of our survey are consistent with the results obtained by other authors. Ilmarinen et al. [33] analysed new dimensions of work ability in 3774 Finnish employees at different ages. The results of linear regression models showed that in the oldest group (aged from 55 to 64 years), health (symptoms), functional capacity (physical) and mental strain explained the best work ability. Family matters and other community factors were less frequently reported by this group of respondents than in the whole group [33]. It should also be remembered that the interpretation of the results we obtained may change because the survey does not take into account the practice of employees coming to work despite an illness, injury or anxiety. This phenomenon is defined in the literature as presenteeism (or working while sick) and is a global and persistent problem [34].

According to other surveys aimed at identifying mental health and work ability predictors, the poor mental condition of male respondents was associated with a lower level of work ability [35]. The survey conducted by Dewa et al. [36], which was aimed at examining the correlation between chronic stress at work, mental health, physical threats and loss of ability to work, also shows that mental disorders accompanying somatic diseases significantly increase the risk of work inability.

Many scientific studies proved the impact of psychosocial stress at work on deterioration in employees' overall health and the existence of different work-related health problems and, consequently, on decreased work ability [7,37]. The data analysis shows that older respondents demonstrated lower levels of control, had greater job demands, felt less insecure about their jobs and had greater levels of social support compared to the reference values of the general Polish population [8]. The results of our research show that a low level of control, understood as an inability to participate in work-related decision-making processes and the conditions under which they work, contributes to the deterioration in employees' work ability. This thesis is also confirmed by other authors. According to the paper by Makowiec-Dąbrowska et al. [10], stress is a factor that adversely affects the assessment of the individual elements of work ability. Among the male survey respondents, the lack of control and awards was a source of stress, while women reported a psychological burden to be the most frequent cause of stress. The results of international research on the impact of job alienation on nurse work ability also showed that poor ability to work among workers aged 50+ years was a consequence of the ageing process and excessive involvement caused by unrealistic demands, low control over certain job aspects and workplace bullying, which is a serious issue in nursing [38]. Another psychosocial work-related factor, which significantly affected the respondents' ability to work, was job insecurity. Analysis of the results shows that greater job security resulted in better work ability. It should be noted, however, that as far as older employees are concerned, job insecurity may be perceived as a lack of job security but also as the unavoidable process of ageing and fears of being unnecessary at work. A literature review by Cox et al. [39] suggests that job insecurity and career development are the source of occupational stress, resulting in a number of physical and mental health issues. The results of Danish research (5-year observation of 5001 employees) indicate that high levels of job insecurity were significantly associated with the respondents' lower self-esteem [40].

While it seems highly probable that the use of analgesic drugs improves work ability, there is very little research on the existence of such a relationship in research literature. However, it is worth noting that the use of over-the-counter pain relievers was analysed. The results show that a high proportion of the respondents use this type of drug,

which is also confirmed by the Centre for Public Opinion Research data. It shows that Poles are at the top of countries with the highest intake of painkillers, especially those that can be bought without a prescription. The most commonly used drugs include analgesics, anti-inflammatory drugs and medications to relieve cold and flu symptoms (68%, respectively) [41]. The consumption of these drugs is very high among the elderly [42].

The issue of work ability among older employees is very relevant due to population projections showing the need for longer working lives. Therefore, understanding the risk factors that may affect premature decline in work ability seems to be important, especially in the group of employees aged 50+ years.

The results of the research indicate that most of the determinants of work ability identified at work are impacted, thus giving the opportunity to conduct some occupational health and preventive programmes in the workplace.

Action plans should focus on promoting and improving health and well-being and on reducing mental work demands of older workers.

## 5. Conclusions

The cross-sectional character of this article is a limitation, which prevents strong conclusions. However, the following can be concluded:

- Older respondents showed a good level of work ability. People with college degrees and white-collar workers showed a higher level of work ability.
- Male survey respondents were less likely to pursue a healthy lifestyle than women. Neither lifestyle nor individual factors significantly affected the respondents' work ability.
- Improvement in physical and mental health as well as increased job security and the level of control over certain job aspects are important elements in the efforts to improve the ability to work and thus extend working lives.

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No potential conflict of interest was reported by the authors.

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