

## Sociodemographic variables, health-related behaviors, and disease characteristics in patients with psoriasis

DANIEL PANKOWSKI<sup>1,2, B-F</sup>, KONRAD JANOWSKI<sup>2, A, D, E, G</sup>,  
WITOLD OWCZAREK<sup>3, D, E</sup>, ADAM BORZĘCKI<sup>4, D, E</sup>

<sup>1</sup> Department of Health Psychology and Rehabilitation, Faculty of Psychology, University of Warsaw, Poland

<sup>2</sup> Department of Health Psychology, Faculty of Psychology, University of Finance and Management, Warsaw, Poland

<sup>3</sup> Dermatological Clinic, Military Institute of Medicine, Warsaw, Poland

<sup>4</sup> NZOZ Med-Laser, Lublin, Poland

A – Study Design, B – Data Collection, C – Statistical Analysis, D – Data Interpretation, E – Manuscript Preparation, F – Literature Search, G – Funds Collection

**Summary Background.** Psoriasis is an inflammatory disease characterized by accelerated proliferation and abnormal keratosis of the epidermis cells. It is influenced by environmental and lifestyle factors, including health-related behaviors.

**Objectives.** The aim of this cross-sectional study was to evaluate the frequency of health-related behaviors and their links with disease characteristics and sociodemographic variables in patients with psoriasis.

**Material and methods.** The study involved 211 patients treated for psoriasis from 3 centers in Poland. Diagnosis of psoriasis type was done by a dermatologist. A structured questionnaire about sociodemographic variables, course of psoriasis and health-related behaviors was conducted with each subject.

**Results.** Most of the subjects spent less than half an hour a day on physical activity (mainly walking and cycling). More than half did not follow the recommended diet. About one third of the patients declared smoking, and the mean BMI was in the overweight category. It was also found that sociodemographic variables differentiated the group in terms of health behaviors. Relationships were found between health-related behaviors such as smoking and some clinical features of psoriasis.

**Conclusions.** The frequency of favorable health-related behaviors among psoriasis patients is unsatisfactory, and some of them may exert a significant impact on the course and treatment effects of psoriasis.

**Key words:** psoriasis, diet, smoking, health behavior.

Pankowski D, Janowski K, Owczarek W, Borzęcki A. Sociodemographic variables, health-related behaviors, and disease characteristics in patients with psoriasis. *Fam Med Prim Care Rev* 2018; 20(2): 149–153, doi: <https://doi.org/10.5114/fmpcr.2018.76459>.

### Background

Psoriasis is a chronic inflammatory skin disease of not fully known etiology. It is characterized by the occurrence of erythematous lesions associated with excessive proliferation of epidermal cells, most likely with an autoimmune basis [1]. Lesions in psoriasis are pink or red, and their surface is described as silver. They are of various sizes, and their number can range from one to thousands.

Psoriasis is one of the most common dermatological diseases, with a prevalence rate ranging from 0 to 0.5% in Indians, Latinos, Asians and Black people, to 0.73–2.9% in Europe and 0.7–2.6% in the U.S. [2]. This variability is primarily due to different exposure to UV rays and genetic factors [3].

The course of psoriasis can vary considerably in different people, and numerous biological and environmental factors may influence it. Environmental factors include physical factors (exposure to UV radiation, epidermal trauma), mental (stress, coexistence of mental disorders) and behavioral (health behaviors – e.g. diet, smoking).

Psoriasis is associated with a significant deterioration in quality of life, and is often the cause of social stigmatization [4]. In a study carried out in 1998 [5] nearly 18,000 respondents reported that psoriasis had a significant impact on psychosocial activities such as workplace and family interaction, or new friends. Also, 10% of respondents aged 18–34 reported suicidal thoughts. On the other hand, in daily activities this disease

exerted the greatest negative impact on sleep, sexual activity, hands, walking, sitting or standing for a longer period of time (mainly in the group of people over 35), or job duties.

The studies conducted so far indicate the beneficial effects of diet and physical activity in psoriasis patients [6]. In his review, Wolters [7] cites research showing that periods of fasting, and low energy or vegetarian diets had a beneficial effect on psoriasis, as well as a diet rich in n-3 polyunsaturated fatty acids from fish oil. Wolters [7] also emphasizes that some patients with psoriasis have elevated gluten sensitivity, and diets modifying the metabolism of polyunsaturated fatty acids can affect the eicosanoid profile by suppressing inflammation.

Wilson et al. [8] reviewed the literature on the issue of physical activity in people with psoriasis. Their data suggested that people with psoriasis who were overweight were less likely to be involved in physical activity, depending on the severity of skin lesions. Up to 80% of patients reported difficulties with walking or sporting activity. Ramsay and Reagan [9] analyzed the psychological barriers associated with physical activity. They stated that 40% avoided sports, 64% avoided communal showers, 64% avoided wearing shorts or short-sleeved shirts, and 11.5% avoided leaving their home. These behaviors are linked to the fact that psoriasis patients perceived their disease as socially stigmatizing: over half of the respondents felt that others stared at them, and thought of their bodies as unclean. Another barrier to physical activity may be physiological limitations. Leibowitz et al. [10] found that psoriatic lesions may adversely affect heat



dissipation, sweating, and cardiac performance in wet and hot environments. Some researchers also point to possible common pathomechanisms of psoriasis and cardiovascular disease [11, 12] and metabolic syndrome [13]. Since the development and the course of these disorders are influenced by lifestyle-related factors [14], it is likely that anti-health behaviors, such as abnormal eating habits, low physical activity or smoking, may also adversely affect psoriasis [15].

All these data point to the fact that the frequency of healthy behaviors undertaken by psoriasis patients may be lower than in other populations, and, at the same time, such behaviors may be of particular significance to the clinical course of psoriasis itself. Therefore, it seems beneficial to study the profile of health-related behaviors and their correlates among Polish patients with psoriasis.

## Objectives

The aim of the study was to evaluate the frequency of health-related behaviors and their relationships with sociodemographic variables and clinical characteristics of psoriasis.

## Material and methods

### Setting

The study was conducted over a period of 4 months at: Department of Dermatology, Military Medical Institute in Warsaw, Department of Dermatology of the Provincial Hospital in Plock, and Med-Laser, a non-public healthcare facility in Lublin.

### Participants

The eligibility criteria were diagnosis of psoriasis carried out by a dermatologist according to ICD-10 criteria, and informed consent for participation in the study. No exclusion criteria were provided.

The average time necessary to complete the questionnaire was about 15 minutes. The participants were informed about the study protocol and their rights, and written informed consent was obtained from each participant.

### Measurement

A questionnaire collecting the data on the course of the disease and the frequency of health-related behaviors was conducted with each of the subjects.

The questionnaire covered 3 groups of variables:

- sociodemographic variables: sex, age, place of residence, level of education;
- health-related variables: time spent on physical activity during the week (assessed on a 9-point scale from 0 – inactivity to 8 – over 10 hours), types of physical activity (jogging, swimming, long walk, gym, aerobics, cycling, nordic walking, team games, gymnastics, other), adherence to the diet (four-point scale from 0 – never to 3 – always), smoking habits (if yes, number of cigarettes smoked per day), weight, height (body mass index; BMI);
- clinical variables: age at onset of psoriasis, number of hospitalizations due to psoriasis and other diseases over the past 3 years, number of surgical procedures, antibiotics and diagnostic tests carried out over the last 3 years, location of lesions on particular body parts (0 – never to 3 – always), overall health status compared to others of the same age (from 0 – very bad to 6 – very good).

### Statistical methods

Due to the nature of the collected data, statistical analyses were performed using non-parametric tests (Spearman *rho*,

Mann–Whitney U test) and frequency analysis in the IMAGO PS software package.

The study protocol was accepted by the Bioethical Committee at the University of Finance and Management in Warsaw.

## Results

### Participants and descriptive data

The study involved 211 consecutive patients who were treated for psoriasis. Fifty-three percent of the sample were in-patients and 47% were outpatients. Fifty-five percent were women and 45% were men. Age ranged from 17 to 89 years ( $M = 42.01$ ,  $SD = 16.21$ ).

For some variables there were missing data: antibiotics – 4 participants; age, physical activity (time) – 3 participants; compliance with dietary recommendations, BMI and smoking – 2 participants, age at psoriasis onset – 1 participant; due to lack of knowledge or refusal to answer.

### Main results

#### Frequency of health-related behaviors in the sample

About 75% of the patients with psoriasis declared that they spent less than 30 minutes a day on physical activity. The most commonly reported physical activity time was 1–2 hours a week. The precise data on frequency of health-related behaviors are shown in Table 1.

**Table 1. Frequency of health-related behaviors in patients with psoriasis ( $n = 211$ ). Some data do not add up to the total of 211 due to single missing data**

	<i>n</i> (%)
<b>Physical activity (minutes/day)</b>	
< 30 minutes	155 (74.52)
≥ 30 minutes	53 (25.48)
<b>Compliance with dietary recommendations</b>	
Never	133 (63.6)
Rarely	28 (13.4)
Frequently	33 (15.8)
Always	15 (7.1)
<b>Smoking</b>	
Yes	69 (33.01)
No	140 (66.99)

The majority of patients (60.8%) declared walking as the predominant form of physical activity. Approximately 27% of the respondents reported cycling, and about 16% took gymnastics as their forms of physical activity. The least common forms of physical activity were Nordic walking (2.4%) and swimming (4.3%). The exact data are illustrated in Figure 1.

Patients with psoriasis very rarely followed their recommended diet. Less than 25%, declared that they often or always complied with dietary recommendations. More than half of the respondents never followed nutritional recommendations (Table 1). Approximately 33% of patients with psoriasis reported smoking cigarettes. The mean body mass index (BMI) in the sample was 27.16 ( $SD = 5.48$ ). Its highest value was 46.47, and the lowest was 17.04. It was also found that the difference between the mean BMI in the sample and the threshold value for overweight ( $BMI \geq 25$ ) was statistically significant ( $t(208) = 5.71$ ,  $p < 0.001$ ).

#### Sociodemographic variables and health-related behaviors

A statistically significant difference ( $U = 4529$ ,  $p = 0.04$ ) in BMI was found between women ( $M = 25.68$ ,  $SD = 5.62$ ) and men ( $M = 27.99$ ,  $SD = 5.22$ ). The ratios of patients smoking cigarettes

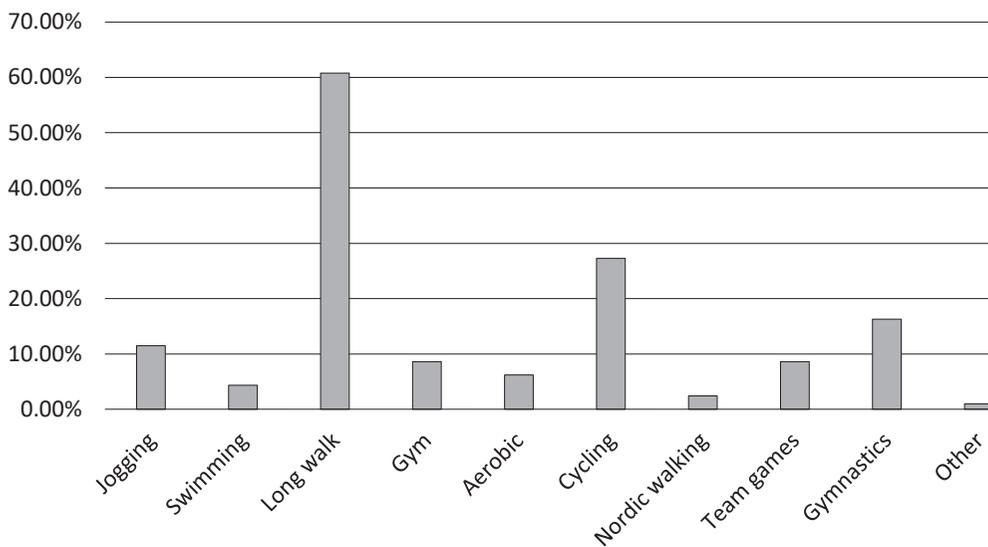


Figure 1. Forms of physical activity reported by patients with psoriasis

were not significantly different ( $\chi^2 = 0.035$ ,  $p = 0.85$ ) for men (33.7%) and women (32.5%). Gender, however, differentiated the patients in terms of the number of cigarettes smoked: women smoked on average fewer cigarettes ( $M = 11.79$ ,  $SD = 6.52$ ) than men ( $M = 15.42$ ,  $SD = 6.42$ ,  $U = 373$ ,  $p = 0.04$ ). The level of education was not statistically significantly associated with any of the studied health-related behaviors. It was found that those who lived in small towns (up to 20,000 people) were less likely to report physical activity ( $M = 1.94$ ,  $SD = 1.76$ ) than those living in rural areas ( $M = 3.23$ ,  $SD = 2.16$ ,  $U = 312.5$ ,  $p = 0.02$ ) or those living in medium-size cities (21–100,000 inhabitants) ( $M = 3.6$ ,  $SD = 2.41$ ,  $U = 212.5$ ,  $p = 0.01$ ). There was also a statistically significant correlation between the age of participants and BMI ( $\rho = 0.51$ ,  $p < 0.001$ ).

#### Health-related behaviors and the clinical course of psoriasis

The relationships were analyzed between the frequency of health-related behaviors and the clinical features of psoriasis, such as: age at onset, number of hospitalizations due to psoriasis and due to other diseases, number of surgical procedures, number of antibiotic therapies, number of diagnostic tests. None of the variables tested showed significant associations with compliance to the diet. The results indicated a positive correlation between BMI and the age at onset of psoriasis, and between the number of cigarettes and the number of antibiotic therapies. Negative correlations were observed between self-evaluated health status and the number of cycles of antibiotic therapies and diagnostic tests. The exact data of the correlational analyses are shown in Table 2.

Table 2. Spearman's  $\rho$  correlation coefficients between clinical features of psoriasis and selected health-related behaviors

	BMI	Number of cigarettes smoked per day	Physical activity	Overall health status compared to others
Age at onset of psoriasis	0.31***	0.01	0.10	-0.03
Number of hospitalizations due to psoriasis	0.13	0.18	0.07	-0.13
Number of hospitalizations due to diseases other than psoriasis	0.10	0.15	0.11	-0.10
Number of surgical procedures	0.09	0.00	0.07	-0.06
Number of antibiotics	0.07	0.27*	-0.06	-0.18**
Number of diagnostic tests	0.16*	0.11	0.15*	-0.22**

BMI – body mass index; \* –  $p < 0.05$ ; \*\* –  $p < 0.01$ ; \*\*\* –  $p < 0.001$ .

Table 3. Spearman's  $\rho$  correlation coefficients between health-related behaviors and incidence of skin lesions on specific areas of the body

	Number of cigarettes smoked per day	Physical activity
Scalp	0.13	-0.02
Ears	0.12	0.03
Shoulders and forearms	0.14	0.05
Elbows	0.20	0.04
Slender thighs	0.27**	0.06
Knees	0.15	-0.04
Nails	0.28*	-0.11
Hands	0.27*	-0.07

**Table 3. Spearman's  $\rho$  correlation coefficients between health-related behaviors and incidence of skin lesions on specific areas of the body**

	Number of cigarettes smoked per day	Physical activity
Intertriginous areas	0.10	-0.03
Face	0.03	0.07
Back	0.04	0.07
Ano-genital areas	0.14	0.01
Chest/abdomen	0.04	0.01
Neck	0.17	-0.03

\*  $p < 0.05$ ; \*\*  $p < 0.01$ .

The correlations between lifestyle variables and frequency of the occurrence of psoriatic lesions on specific body parts were calculated. The number of cigarettes smoked per day correlated positively with the incidence of lesions located on the thighs and shoulders, fingernails and hands. The exact figures are shown in Table 3.

## Discussion

### Key results

The data obtained in this study clearly demonstrate that compliance with recommendations related to healthy life style is low among patients with psoriasis. As suggested by research, physical activity can have a positive effect on the occurrence of skin lesions [16]. Our results suggest that nearly 75% of patients underwent physical activity for less than 30 minutes per day. This may also be related to discomfort resulting from treatment, shame, or social stigmatization (low number of people using swimming pools) or lack of access to sports facilities (patients living in small towns were less likely to undertake physical activity). However, other studies with control groups suggest that [17, 18] the proportion of people with psoriasis involved in physical activity is similar to healthy people.

Also, a considerable ratio of patients did not follow the dietary recommendations, such as avoiding alcohol consumption and spicy dishes. Results from other studies [19, 20] documented the negative effects of substances of abuse on the course of psoriasis, as well as the outcome of treatment. Cigarette smoking and unhealthy eating habits may pose a risk of other conditions, including cancers that are more common among psoriasis patients than in the general population [21, 22]. It is also important that the mean BMI in psoriasis patients is above the normal range. Overweight or obesity is linked to many diseases, including cardiovascular diseases and diabetes. Studies in other countries indicate a relationship between psoriasis and high BMI [23]; there are also case studies reporting a decrease in psoriasis severity after gastric bypass insertion [24]. Studies also indicate that obesity is more prevalent in people with severe psoriasis compared to those with mild lesions [25]. Sterry et al. [26] also point out that the pathophysiology of both psoriasis and obesity points to many common cytokines that contribute to metabolic syndrome, such as hypertension, dyslipidemia and insulin resistance.

Due to the fact that sociodemographic variables such as sex and education have been reported to correlate with the frequency of health behaviors in some patient populations [27], we also analyzed the association of these factors with health-related behaviors in our study. The co-occurrence of psoriasis and many other diseases may be related to common underlying pathomechanisms, such as inflammatory processes. However, unsatisfactory frequency of revealed health-related behaviors among psoriasis patients may also contribute to this co-occurrence.

Many of the correlation values between the variables examined in our study were low (cf. Tab. 2). It should be remembered that health-related variables are among a wide array of those potentially affecting the clinical course of psoriasis, and no single factor should be expected to account for considerable portions of variance in such a complex disease as psoriasis. Even in diseases in whose etiologies life-style factors are believed to be crucial risk-factors, such as coronary heart disease, single indicators of health-related behavior usually show low correlations with disease outcomes. There is a need to conduct longitudinal studies which would take into account the interactions of various variables (medical and behavioral) to obtain a better understanding of the importance of each risk factor.

### Interpretation

Both pro and anti-health behaviors seem to play a role in psoriasis. However, so far, no studies have been conducted on the prevalence of this type of behavior in psoriasis patients in Poland. Because healthy behaviors tend to be neglected by patients with psoriasis, it seems important for medical practitioners to promote such behaviors and educate their patients at each level of physician-patient contact.

### Limitations of the study

Our study has some limitations. These analyses take into account only a small number of variables that may be relevant to the course of psoriasis, and we did not cover other variables, such as the severity of depressive or anxiety symptoms, treatment, exposure to sunlight, or comorbidities. It would be worthwhile to use a program that promotes healthy eating behavior in the experimental group with a double blind randomized study. Another limitation is the subjective character of the presented data, and this may be of importance particularly when reporting health-related behaviors. The study also did not use a control group because of the nature of the analysis. In turn, through comparative analysis of healthy people, it would be possible to compare both the time spent on physical activity and the profile of preferred activities. The last limitation is the use of nonparametric tests, which is related to the nature of the collected data.

## Conclusions

Data collected in the above study clearly indicate that the frequency of pro-health behaviors in patients with psoriasis is very low. For this reason, there is a need for greater promotion of these types of behaviors, at every stage of the patient's contact with medical staff, emphasizing their role, e.g. by developing and introducing a program focused on promoting healthy behavior in patients with psoriasis.

In addition, it was noted that correlations between clinical variables and health-related behaviors are very low. It is likely that health-related behaviors cooperate with many other factors affecting the course of such a complex disorder as psoriasis.

Source of funding: This work was funded from the authors' own resources.

Conflicts of interest: The authors declare no conflicts of interest.

## References

1. Owczarczyk-Saczonek A, Placek W. Łuszczycza jako choroba autoimmunologiczna. *Przegl Dermatol* 2014; 101: 278–287 (in Polish).
2. Parisi R, Symmons D, Griffiths C, et al. Global epidemiology of psoriasis: a systematic review of incidence and prevalence. *J Invest Dermatol* 2012; 133(2): 377–385.
3. Enamandram M, Kimball AB. Psoriasis epidemiology: the interplay of genes and the environment. *J Invest Dermatol* 2013; 133(2): 287–289.
4. Ginsburg IH, Link BG. Psychosocial consequences of rejection and stigma feelings in psoriasis patients. *Int J Dermatol* 1993; 32: 587–591.
5. Krueger G, Koo J, Lebwohl M, et al. The impact of psoriasis on quality of life: results of a 1998 National Psoriasis Foundation patient-membership survey. *Arch Dermatol* 2001; 137(3): 280–284.
6. Naldi L, Conti A, Cazzaniga S, et al. Diet and physical exercise in psoriasis: a randomized controlled trial. *Br J Dermatol* 2014; 170(3): 634–642.
7. Wolters M. Diet and psoriasis: experimental data and clinical evidence. *Br J Dermatol* 2005; 153(4): 706–714.
8. Wilson PB, Bohjanen KA, Ingraham SJ, et al. Psoriasis and physical activity: a review. *J Eur Acad Dermatol Venereol* 2012; 26(11): 1345–1353.
9. Ramsay B, O'Reagan M. A survey of the social and psychological effects of psoriasis. *Br J Dermatol* 1988; 118(2): 195–201.
10. Leibowitz E, Seidman DS, Laor A, et al. Are psoriatic patients at risk of heat intolerance? *Br J Dermatol* 1991; 124(5): 439–442.
11. Pietrzak A, Janowski K, Łopatyński J, et al. Psoriasis and heart. Something new under the sun. *G Ital Dermatol Venereol* 2006; 141: 457–463.
12. Neneman A, Adamski Z. Aspekty kliniczne i epidemiologiczne zaburzeń ogólnoustrojowych u chorych na łuszczycę. *Forum Med Rodz* 2009; 3(6): 447–446 (in Polish).
13. Sommer DM, Jenisch S, Suchan M. Increased prevalence of the metabolic syndrome in patients with moderate to severe psoriasis. *Arch Dermatol Res* 2006; 298(27): 321–328.
14. Baran A, Flisiak I, Chodyncka B. Znaczenie wybranych adipokin w łuszczycy. *Prz Dermatol* 2011; 98: 422–428 (in Polish).
15. Kimball AB, Gladman D, Gelfand JM, et al. National psoriasis foundation clinical consensus on psoriasis co-morbidities and recommendations for screening. *J Am Acad Dermatol* 2008; 58(6): 1031–1042.
16. Raychaudhuri SP, Gross J. Psoriasis risk factors: role of lifestyle practices. *Cutis* 2000; 66: 348–352.
17. Mallbris L, Granath F, Hamsten A, et al. Psoriasis is associated with lipid abnormalities at the onset of skin disease. *J Am Acad Dermatol* 2006; 54(4): 614–621.
18. Prizment AE, Alonso A, Folsom AR, et al. Association between psoriasis and incident cancer: the Iowa's Women's Health Study. *Cancer Causes Control* 2011; 22: 1003–1010.
19. Gupta MA, Schork NJ, Gupta AK, et al. Alcohol intake and treatment responsiveness of psoriasis: a prospective study. *J Am Acad Dermatol* 1993; 28(5 Pt 1): 730–732.
20. Poikolainen K, Reunala T, Karvonen J. Smoking, alcohol and life events related to psoriasis among women. *Br J Dermatol* 1994; 130(4): 473–477.
21. Boffetta P, Gridley G, Lindelof B. Cancer risk in a population-based cohort of patients hospitalized for psoriasis in Sweden. *J Invest Dermatol* 2001; 117(6): 1531–1537.
22. Hannuksela-Svahn A, Pukkala E, Laara E, et al. Psoriasis, its treatment, and cancer in a cohort of Finnish patients. *J Invest Dermatol* 2000; 114(3): 587–590.
23. Naldi L, Chatenoud L, Linder D, et al. Cigarette smoking, body mass index, and stressful life events as risk factors for psoriasis: results from an Italian case-control study. *J Invest Dermatol* 2005; 125(1): 61–67.
24. de Menezes Ettinger JE, Azaro E, de Souza CA, et al. Remission of psoriasis after open gastric bypass. *Obes Surg* 2006; 16(1): 94–97.
25. Neimann A, Shin D, Wang X, et al. Prevalence of cardiovascular risk factors in patients with psoriasis. *J Am Acad Dermatol* 2006; 55(5): 829–835.
26. Sterry W, Strober BE, Menter A. Obesity in psoriasis: the metabolic, clinical and therapeutic implications. Report of an interdisciplinary conference and review. *Br J Dermatol* 2007; 157(4): 649–655.
27. Grochans E, Gburek D, Polankiewicz P, et al. Ocena zachowań zdrowotnych pacjentów z uwzględnieniem zmiennych socjodemograficznych. *Fam Med Prim Care Rev* 2012; 14(2): 148–150 (in Polish).

Tables: 3

Figures: 1

References: 27

Received: 03.07.2017

Reviewed: 23.09.2017

Accepted: 19.03.2018

Address for correspondence:

Daniel Pankowski, MSc

Katedra Psychologii Zdrowia i Rehabilitacji

Wydział Psychologii

Uniwersytet Warszawski

ul. Stawki 5/7

00-183 Warszawa

Polska

Tel.: +48 22 554-97-05

E-mail: daniel.pankowski@psych.uw.edu.pl