



# The impact of selected factors on acceptance of illness and life satisfaction among female residents of rural areas treated for osteoporosis

Mariola Janiszewska<sup>1,A-B,D-F</sup>, Agnieszka Barańska<sup>1,A-B,F</sup>, Tomasz Jędrych<sup>2,C,F</sup>, Teresa Kulik<sup>3,D-F</sup>, Jagoda Kasperek<sup>4,B,E-F</sup>, Bartłomiej Drop<sup>1,C,E-F</sup>

<sup>1</sup> Department of Informatics and Medical Statistics with E-learning Lab, Medical University, Lublin, Poland

<sup>2</sup> Department of Foreign Languages, Medical University, Lublin, Poland

<sup>3</sup> Chair of Public Health, Medical University, Lublin, Poland

<sup>4</sup> Medical University, Lublin, Poland

A – Research concept and design, B – Collection and/or assembly of data, C – Data analysis and interpretation, D – Writing the article, E – Critical revision of the article, F – Final approval of article

Janiszewska M, Barańska A, Jędrych T, Kulik T, Kasperek J, Drop B. The impact of selected factors on acceptance of illness and life satisfaction among female residents of rural areas treated for osteoporosis. *Ann Agric Environ Med.* 2019; 26(4): 592–599. doi: 10.26444/aaem/109598

## Abstract

**Introduction.** Osteoporosis is a chronic condition with serious sequela, including primarily bone fractures, and impacts on almost all spheres of human life. It is important for patients undergoing treatment to accept their health status and feel satisfied with life.

**Objective.** The aim of the study was to determine the relationship between socio-demographic factors, duration of the illness, self-assessment of the patient's knowledge of osteoporosis, and also between illness management support and acceptance of the illness and life satisfaction among females with chronic osteoporosis, resident in rural areas.

**Materials and method.** The study, conducted from September 2016 – June 2017, involved 207 patients of the Clinic of Orthopaedics and Rehabilitation and the Clinic of Gynaecology at the Independent Public Teaching Hospital No. 4 in Lublin, eastern Poland. The study used the Acceptance of Illness Scale (AIS) and the Satisfaction With Life Scale (SWLS). Statistical analysis was performed with Student's t-test, analysis of variance (ANOVA), Tukey's range test, and chi-squared test. A p-value of <0.05 defined statistical significance of differences. The analysis was performed using commercial SPSS Statistics 19 software (IBM Corp., Armonk, NY, USA).

**Results.** The respondents showed average acceptance of their illness (22.2±6.9) and relatively low satisfaction with life (14.7±5.6). Older age, low level of education, poor living conditions, prolonged illness, and frequent ailments are all associated with lower acceptance of the illness and poorer life satisfaction.

**Conclusions.** As part of their treatment, chronically ill patients should be provided with appropriate support, in particular from healthcare personnel, health education and improved living conditions.

## Key words

social support, life satisfaction, osteoporosis, acceptance of the illness

## INTRODUCTION

The US National Institute of Health defines osteoporosis as an illness characterised by decreased bone strength, which results in an increased risk of fractures [1]. Osteoporosis is a chronic and latent disease of affluence, the first significant symptom of which is usually a bone fracture [2]. The high social and economic costs of osteoporosis pose a challenge for public healthcare and healthcare personnel, especially given that the majority of patients with osteoporosis receive no treatment [3, 4]. In fact, less than 20% of people who have had an osteoporotic fracture underwent pharmacological treatment of osteoporosis [4, 5]. According to statistical data, 22 million women and 5.5 million men in EU countries have osteoporosis [6]. Osteoporosis, which is also referred to as “the silent disease” [7], affects 21% of women and 6% of men over 50 years of age, and the lifetime risk of osteoporotic fracture in women at this age is as high as 40% [8, 9].

Due to its chronic nature and serious sequela, including primarily bone fractures, most notably of the vertebra, the proximal end of the femur and the distal end of the radius, osteoporosis has a significant impact on nearly all spheres of human life. Chronic pain and the impaired ability to perform self-care and movement are the key consequences [8, 10]. Chronic conditions force people to make adaptive changes in many aspects of their lives and to adjust to and accept new, often difficult, situations. Depending on their life experiences and psychological structures, people either enter the sick role and accept their illness, or deny it and reject the patient role [11, 12]. A chronically ill individual has to cope with the consequences of loss, including loss of normal physical function, loss of social role, which is associated with withdrawal from previous professional or family functions, or the loss of interpersonal contacts. These consequences are more severe in people who struggle to accept their new health situation, unable to cope with negative emotions [10]. By accepting their illness, people are able to adapt to the associated limitations, to maintain or regain their self-esteem and sense of control over life, and to nurture more positive emotions [13].

Address for correspondence: Mariola Janiszewska, Department of Informatics and Medical Statistics with E-learning Lab, Medical University of Lublin, Poland  
E-mail: mariola.janiszevska@gmail.com

Received: 01.03.2019; accepted: 07.05.2019; first published: 27.05.2019

Subjective well-being, constituted by life satisfaction, positive feelings and the lack of negative feelings, may constitute one of the components of the quality of life. According to some literature, life satisfaction is one of the elements associated with a sense of quality of life, and thus can be used interchangeably with the “feeling of a high quality of life” [14]. Life satisfaction is the effect of comparing one’s life situation with personal norms, standards and goals. If the result is satisfactory, one experiences a sense of life satisfaction [15]. The level of overall life satisfaction depends on people’s satisfaction with various aspects of their lives, such as health, family, friends, professional work, as well as their material status [16].

The ability to notice and use the offered social support plays an important role in the adaptive process. The notion of social support is related to the existence of a “social network”, i.e. one’s functioning among other people and the associated interrelationships [17]. The essence of social support is to instil in ill people the subjective conviction that they are being cared for within their respective networks, and that communication within the network is based on mutual obligations. Social support is important for maintaining human health, preventing illness and supporting the recovery process [18, 19].

## OBJECTIVE

The aim of the study was to determine the relationship between socio-demographic factors, duration of the illness, self-assessment of the patient’s knowledge of osteoporosis, and also between illness management support and acceptance of the illness and life satisfaction among females with chronic osteoporosis, resident in rural areas.

## MATERIALS AND METHOD

The study, conducted from September 2016 – June 2017, involved patients of the Clinic of Orthopaedics and Rehabilitation and the Clinic of Gynaecology at the Independent Public Teaching Hospital No. 4 in Lublin, eastern Poland, using a diagnostic survey method.

A convenience sampling method was used. The study involved 219 postmenopausal women aged 45–89 (63±9 years), 207 of whom qualified for statistical analysis.

Inclusion criteria for a woman to be included in the study group were:

- a minimum of one year past her last ever menstruation (menopause);
- treatment for osteoporosis;
- no chronic diseases reported in medical history;
- being a resident of a rural area;
- providing consent to participate in the study.

Exclusion criteria for women were as follows:

- menstruating women or women who last menstruated within the last year;
- no treatment for osteoporosis;
- treatment for other chronic diseases;
- being a resident of an urban area;
- not providing informed consent to participate in the study.

The authors utilised three research instruments:

1. Own survey questionnaire consisting of two parts. The first part comprised a personal information section with questions on the subject of the study – socio-demographic data. The second part featured open and closed questions aimed at providing information on the analysed area. The respondent’s subjective evaluation of health, self-assessment of knowledge of osteoporosis, duration of the illness and the occurrence of osteoporotic fractures were determined by means of individual questions in an Original Questionnaire. The presented data were collected after completion of the questionnaires in private conversation with the surveyed individual.
2. The Acceptance of Illness Scale AIS (B. J. Felton, T. A. Revenson i G. A. Hinrichsen, 1884), as adapted into Polish by Z. Juczyński, was employed in order to study the degree of acceptance of illness [15]. The AIS is used to survey patients and includes eight statements related to the negative consequences of poor health, such as accepting the limitations imposed by the illness, lack of self-sufficiency, low self-esteem, and the feeling of dependence on other people. The respondents specified their current condition on a 5-point Likert scale from 1 – *strongly agree* to 5 – *strongly disagree*. The *strongly agree* response (1) means no adaptation to the illness, while the *strongly disagree* response (5) means a full acceptance of the illness. Scoring based on the AIS ranges from 8–40 points, with higher scores being associated with greater acceptance of the illness and lower mental distress. In order to evaluate the degree of illness acceptance, three score ranges were created, with a score of 8–18 indicating low acceptance, 19–29 average acceptance and 30–40 high acceptance of illness [15, 20]. Cronbach’s alpha for the AIS was 0.85 [15], similar to the value for the original scale (0.82) [20].
3. The Satisfaction With Life Scale SWLS (E. Diener, R.A. Emmons, R.J. Larson, S. Griffin, 1985), as adapted into Polish by Z. Juczyński, was used to evaluate satisfaction with life [15]. The Satisfaction With Life Scale SWLS includes five statements by which the respondents evaluate to what extent they have applied to their lives so far. The result is overall life satisfaction [15]. The scale makes it possible to evaluate life as a whole, taking into account the individual differences between individuals and populations [21]. The scale is intended for surveying healthy and ill adults. The respondents indicate the degree to which they agree with each item using a 7-item scale from 1 – *strongly disagree* to 7 – *strongly agree*. The resulting score ranges from 5–35 and indicates the degree of satisfaction with life. The higher the score, the higher the satisfaction with life [15, 22, 23]. A score within the range 5–9 indicates extreme life dissatisfaction, 20 indicates neutral, which means that the respondent is equally satisfied and dissatisfied with his or her life, while a score exceeding 30 points suggests that the respondent is extremely satisfied with his or her life [24]. Cronbach’s alpha for the SWLS survey of 371 people proved satisfactory (0.81) [15]; for the original version of the tool, it was 0.87 [22].

**Ethical issues.** The study was conducted in accordance with the principles for human research set by the Declaration of Helsinki. The study was voluntary and each participant signed a consent form and was assured that the study would be kept anonymous. The purpose of the study and how

the questionnaires should be filled-in was explained to the respondents. The surveyed women did not have to complete the questionnaire on their own, this was carried out by the person conducting the survey, and the time of the meeting was adapted to the individual capabilities and efficiency of the surveyed women.

**Statistical analysis.** The collected material was subjected to a statistical analysis. The quantitative variables were described with a mean and a standard deviation. For the qualitative variables, the number and percentage of indicated categories were provided. The Shapiro–Wilk test was used to test the hypothesis of the normality of distribution before parametric tests were carried out. Student's t-test was employed in the statistical analysis for independent groups to evaluate whether there was a statistical difference between the groups in terms of ratio variables, while analysis of variance (ANOVA) was used to check whether there were statistical differences between more than two groups in terms of ratio variables. In order to determine which groups differed significantly from one another, Tukey's range test was carried out. Categorical data were compared with *chi-squared* test. The Pearson correlation coefficient was used to evaluate whether there were statistically significant correlations between ratio variables, while Spearman's rho was used to evaluate whether there were statistically significant correlations between rank variables, as well as between ratio variables and rank variables.

The results of the analysis were accepted as statistically significant if  $p < 0.05$ . The analysis was performed using commercial SPSS Statistics 19 software (IBM Corp., Armonk, NY, USA).

## RESULTS

The study enrolled 207 osteoporotic women residing in rural areas (age  $63 \pm 9$ ; range 45–89 years). Nearly half the respondents (43.5%) were married or in a civil partnership, 32.9% were widows, 17.4% divorcees and 6.3% never married. Most of the study participants had vocational education (40.1%) and secondary education (30.4%), while others had higher (16.9%) or primary (12.6%) education. The vast majority of respondents (73.9%) described their living conditions as good or very good, while 26.1% as poor or very poor.

Every third surveyed woman from rural areas had suffered from osteoporosis for more than three years, while a substantial number (61.4%) of the respondents had sustained osteoporotic fractures. The majority of all injuries were proximal femoral fractures (20.8%) and wrist fractures (19.8%). Low-energy vertebral fractures affected 13.5% of the respondents, while approx. 11% experienced osteoporotic fractures in other locations.

As many as 80.7% of the studied individuals complained about chronic muscle and bone pain. In 39.1% of the women, bone fractures accompanied minor trauma. Most women (62.8%) were affected by ailments associated with osteoporosis on an everyday basis. Most respondents evaluated their health as poor (41.1%) or very poor (28.5%), while only 26.6% as good, and merely 3.6% as very good. More than half the respondents (60.9%) stated that they had experienced support from other people after being diagnosed with osteoporosis.

Unfortunately, 22.2% of women received no such support despite expecting it, and 16.9% did not receive support but also expected none. When asked about their knowledge of osteoporosis, the respondents usually assessed it as good (32.9%), satisfactory (31.4%) or limited (27.1%), and only 8.2% of the respondents stated that they had no knowledge of this disease. The respondents obtained information on osteoporosis most frequently from healthcare professionals (44%) and other patients (36.7%). The Internet / TV was cited by 26.1% of the respondents.

Statistical analysis of the results demonstrated that female residents of rural areas suffering from a chronic condition – osteoporosis (taking into account a significant AIS value) reported an average degree of acceptance of illness (mean score  $22.2 \pm 6.9$  points). The standard deviation suggests that the scores in the surveyed group varied moderately. The respondents scored from 8–40 points on the AIS. Women's life satisfaction measured using the SWLS (taking into account the mean theoretical value) was rather low (with a mean score of  $14.7 \pm 5.6$  points). The standard deviation suggests that the scores in the surveyed group varied moderately. The respondents scored from 5–34 points on the SWLS. Since life satisfaction is the product of the individual's expectations and the achieved outcome, the conclusion can be drawn that the surveyed women exhibited a disproportion between their expectations and their actual life situations (Tab. 1).

**Table 1.** Basic descriptive statistics of AIS and SWLS

AIS	$22.2 \pm 6.9$ (8–40)
SWLS	$14.7 \pm 5.6$ (5–34)

Data are means  $\pm$  SD (min–max range)

All possible answers, from 1–5, were given to the statements related to the acceptance of illness. It should be noted that the lower the mean, the more the answer agreed with a given statement. Therefore, the respondents were most likely to agree with the following statements: *I cannot do what I like because of my health condition* (mean score  $2.5 \pm 1$  point) and: *I will never be self-sufficient to the extent I would like it to be* (mean score  $2.5 \pm 1$  point), and least likely to agree with the statement: *My illness makes me a burden for my family and friends.* (mean score  $4 \pm 1$  point) (Tab. 2).

**Table 2.** Descriptive statistics of statements given by respondents on the AIS

AIS	
I have problems with adapting to limitations imposed by my illness.	$3.3 \pm 1.3$ (1–5)
I cannot do what I like because of my health condition.	$2.5 \pm 1$ (1–4)
My illness sometimes makes me feel unwanted.	$3.5 \pm 1$ (1–5)
My health problems make me rely on others more than I want to.	$3 \pm 1.4$ (1–5)
My illness makes me a burden for my family and friends.	$4 \pm 1$ (1–5)
My health condition makes me feel not a woman of good value.	$3.2 \pm 1.2$ (1–5)
I will never be self-sufficient to the extent I would like to be.	$2.5 \pm 1$ (1–4)
I think people around me often feel embarrassed because of my illness.	$3.9 \pm 1$ (1–5)

Data are means  $\pm$  SD (min–max range)

All possible answers, from 1–7, were given to the statements related to life satisfaction. In the case of the SWLS, the higher

the mean, the more the answer agrees with a given statement. Therefore, the respondents were most likely to agree with the following statements: *I am satisfied with my life* (mean score  $4 \pm 1.4$  points) and: *So far I have gotten the important things I want in life* (mean score  $4 \pm 1.6$  points), and least likely to agree with the statement: *If I could live my life over, I would change almost nothing* (mean score  $2.9 \pm 1.7$  points) (Tab. 3).

**Table 3.** Descriptive statistics of statements given by respondents on the SWLS

SWLS	
In most ways my life is close to my ideal.	$3.1 \pm 1.4$ (1–7)
The conditions of my life are excellent.	$3.3 \pm 1.5$ (1–7)
I am satisfied with my life	$4 \pm 1.4$ (1–7)
So far, I have achieved the important things I want in life	$4 \pm 1.6$ (2–7)
If I could live my life over, I would change almost nothing	$2.9 \pm 1.7$ (1–7)

Data are means $\pm$ SD (min–max range)

The degree of acceptance of illness and life satisfaction of a chronically ill person can be affected by a number of factors, such as socio-demographic conditions, duration of the illness, knowledge and awareness of the illness, as well as the support received.

Statistical analysis shows that age affected the key variables. The older the respondent, the lower the acceptance of illness ( $p < 0.001$ ;  $\rho = -0.327$ ) (moderately strong correlation) and the lower the life satisfaction ( $p < 0.025$ ;  $\rho = -0.156$ ) (rather weak correlation). Therefore, it is harder for older people to adjust to their health situation caused by a chronic condition, and their life satisfaction is lower. A correlation was also observed between the level of education and the degree of acceptance of illness and life satisfaction. The higher the level of educational attainment, the better the acceptance of illness ( $p < 0.001$ ;  $\rho = 0.401$ ) (moderately strong correlation) and the greater the life satisfaction ( $p < 0.001$ ;  $\rho = 0.276$ ) (a not very strong correlation). In a similar fashion, the better the living conditions of the respondents, the greater the acceptance of illness ( $p < 0.001$ ;  $\rho = 0.296$ ) and the greater the life satisfaction ( $p < 0.001$ ;  $\rho = 0.267$ ) (not very strong correlations). These correlations are highly statistically significant.

At the same time, no statistically significant differences were observed between marital status and life satisfaction. It is worth noting, however, that women who had never married reported markedly better life satisfaction than other respondents. Also, women who had never married (mean score  $28.9 \pm 6.1$  points) reported substantially and significantly better acceptance of their illness than women who were married or in a civil partnership (mean score  $22.5 \pm 7$  points), divorced women (mean score  $22.9 \pm 7.3$  points) and widows (mean score  $20.1 \pm 5.7$  points) (Tab. 4).

Statistical analysis of this study demonstrated that the shorter the duration of treatment and the rarer the ailments associated with osteoporosis, the better the acceptance of illness ( $p < 0.001$ ). Similarly, the shorter the duration of treatment and the rarer the ailments, the greater the respondents' life satisfaction ( $p < 0.003$ ). The strongest (negative) correlation was observed between the degree of acceptance of illness and the frequency of ailments ( $p < 0.001$ ;  $\rho = -0.502$ ).

The relationships between support in illness offered by other people and acceptance of the illness and satisfaction

**Table 4.** Marital status and acceptance of illness and life satisfaction

	AIS		SWLS	
Never married (1)	$28.9 \pm 6.1$		$17.5 \pm 5.1$	
Married or in a civil partnership (2)	$22.5 \pm 7$		$15.3 \pm 6.3$	
Divorced (3)	$22.9 \pm 7.3$		$14.5 \pm 5.4$	
Widow (4)	$20.1 \pm 5.7$		$13.5 \pm 4.5$	
ANOVA	F	6.847	2.585	
	p<	0.001	ns	
Tukey's range test, Significant differences:		1/2	1/3	1/4

Data are means $\pm$ SD, ANOVA test, Tukey's test

with life as reported by the women were also studied. No statistically significant differences were found between support from the family and acceptance of the illness; however, the respondents who had experienced such support reported a markedly greater satisfaction with life (mean score  $15.5 \pm 5.7$  points), compared to those who had received no such support (mean score  $14 \pm 5.5$  points).

The analysis also indicated that women who received support from friends showed a substantially and significantly higher degrees of acceptance of their illness ( $p < 0.004$ ;  $t = -2.934$ ), and life satisfaction ( $p < 0.001$ ;  $t = -3.275$ ) than those respondents who had no such support. Nevertheless, it is surprising that no statistically significant correlation was observed between the support offered by healthcare professionals and the key variables.

The study additionally examined the relationships that such variables as education, marital status, and living conditions had on acceptance of the illness and satisfaction with life.

When analysing the correlation between the attained level of education and experiencing support in illness, a highly statistically significant correlation was found between the variables indicated ( $p < 0.001$ ). Analysis showed that the largest group of respondents who had received support from other people were women with primary education (92.3%), while the smallest group comprised respondents with vocational education (51.8%). The largest group of respondents who expected support but received none had secondary education (36.5%), while the smallest group in this respect (only 3.8%) had primary education. Regarding the absence of support and expecting none, this was the most evident among women with vocational education (27.7%), and the least among those with primary education (3.8%).

There was also a statistically significant correlation between the marital status of the respondents and support they had received in the illness. Respondents in relationships (25.6%) were much more likely not to expect support than women without husbands or partners (10.3%). Also, women without husbands or partners (64.1%) were slightly more likely than women who were married or in a relationship (56.7%) to experience support from other people.

Respondents who had a better financial status and enjoyed better living conditions were much less likely to experience support in illness, despite expecting such support. This group of respondents was also less likely to expect such support than respondents reporting worse living conditions. Statistical analysis indicated a highly statistically significant correlation between living conditions and being supported in illness ( $p < 0.001$ ). The worse the living conditions, the more the women received support. Conversely, respondents with good living conditions were by far the largest group who had

received no such support, despite expecting it. Respondents who reported having very good living conditions were the largest group who did not expect support (Tab. 5).

**Table 5.** Living conditions and support in illness

Have you experienced support in illness?	Living conditions						Total	
	very good		good		(very) poor		N	%
	N	%	N	%	N	%		
Yes	15	34.9%	66	60.0%	45	83.3%	126	60.9%
No	6	14.0%	34	30.9%	6	11.1%	46	22.2%
I don't expect support, I am perfectly well on my own	22	51.2%	10	9.1%	3	5.6%	35	16.9%
<b>Total</b>	<b>43</b>	<b>100.0%</b>	<b>110</b>	<b>100.0%</b>	<b>54</b>	<b>100.0%</b>	<b>207</b>	<b>100.0%</b>

$\chi^2 = 55.251; p < 0.001$

Having appropriate knowledge of a chronic condition is an important aspect of treatment and adaptation to a new health situation. Study results point to a correlation between knowledge of osteoporosis, as self-assessed by the respondents, and acceptance of the illness and satisfaction with life. The higher the self-assessment of knowledge of osteoporosis, the higher the degree of acceptance of the illness ( $p < 0.001$ ;  $\rho = 0.359$ ) and life satisfaction ( $p < 0.001$ ;  $\rho = 0.332$ ). These correlations were moderately strong.

Furthermore, a highly statistically significant correlation was found between the self-assessment of knowledge of osteoporosis and support in illness ( $p < 0.001$ ). The study found that the better the self-assessment of knowledge of the illness, the more it was likely for the women to experience support in illness. Conversely, the worse the self-assessment of knowledge of the disease, the more likely they were to report no support in illness, and to expect no such support (Tab. 6).

**Table 6.** Self-assessment of knowledge of osteoporosis and experienced support in illness

Have you experienced support in illness?	Self-assessment of knowledge of osteoporosis						Total	
	(very) good		satisfactory		limited or none		N	%
	N	%	N	%	N	%		
Yes	61	71.8%	39	60.0%	26	45.6%	126	60.9%
No	16	18.8%	18	27.7%	12	21.1%	46	22.2%
I don't expect support, I am perfectly well on my own	8	9.4%	8	12.3%	19	33.3%	35	16.9%
<b>Total</b>	<b>85</b>	<b>100.0%</b>	<b>65</b>	<b>100.0%</b>	<b>57</b>	<b>100.0%</b>	<b>207</b>	<b>100.0%</b>

$\chi^2 = 17.931; p < 0.001$

## DISCUSSION

In the rapidly ageing Polish society, osteoporosis is an important but still underestimated epidemiological problem. Bone fractures associated with the disease cause disability, reduced quality of life, and a significant increase in the risk of death [4]. The high social and personal costs related to osteoporosis pose a challenge for public healthcare and

physicians, especially given that the majority of patients with osteoporosis receive no treatment [25]. The authors attempted to present the highly complex and often neglected issue of the impact of osteoporosis on the quality of life of rural women. While this problem is observed very often, the referenced dimension of osteoporosis and its sequelae are rarely addressed. The topic at hand is also of importance due to the small number of studies concerning the acceptance of illness, satisfaction with life, or broadly understood quality of life of people affected by this problem.

The psychological sciences highlight the importance of well-being, satisfaction, happiness and positive emotions for the normal functioning of human beings [26]. Being diagnosed with a chronic condition, such as osteoporosis, is surely a source of psychological stress, causes anxiety and fear, and decreases the life satisfaction of the affected person. Nevertheless, chronic conditions can last long enough for people to eventually come to terms with them, adapt to their new situation and re-evaluate their lives, and thus accept their illness. The positive emotions accompanying this process allow individuals to overcome mental distress and regain satisfaction with life.

Accepting a chronic condition and adapting to new health conditions associated with the illness are prerequisites for starting an appropriate therapy and thereby improving one's quality of life. People who accept their health status have an opportunity to achieve greater satisfaction with their life situation, which is sometimes difficult and yet acceptable. The literature offers isolated cases of studies concerning the degree of acceptance of illness in people suffering from osteoporosis. Accepting the illness empowers patients [27], allows a sensible evaluation of their new situation related to falling ill, and thereby makes it possible to take action aimed at improving their health status [28].

The current study demonstrates that the surveyed osteoporotic female residents of rural areas reported a mean average degree of acceptance of illness ( $22.2 \pm 6.9$ ). Socio-demographic variables may be a factor in the degree to which the respondents accept their chronic condition. The survey showed statistically significant age- and education-related differences in the degree of acceptance of illness. The authors have demonstrated that older people find it more difficult to accept their illness and the new life situation. The older the patient, the weaker the acceptance of that patient's illness. Conversely, the higher the attained education, the greater the acceptance of illness. Also, respondents with better living conditions reported greater acceptance of their illness. Pawlikowska-Łagód et al. [29] reached similar conclusions when analysing the results of surveys conducted among patients treated for osteoporosis. In this case, the degree of acceptance reported by the surveyed women was slightly higher, but also at an average level ( $M = 27.3$ ). As in the current study, the age at which women were diagnosed with osteoporosis and their education correlated significantly with the degree of acceptance of their illness. Women with higher education reported a higher degree of acceptance of their illness, compared to the other respondents, while the later the illness was diagnosed, the poorer was its acceptance.

According to Scholten et al. [30], full acceptance and understanding by the spouse constitutes a very important factor in treatment and recovery. This thesis is not supported by the results of the current study, which demonstrated that women who had never married reported highly significantly

greater acceptance of illness than married women or those in civil partnerships, and divorced respondents and widows.

Osteoporosis and the bone fractures associated with it, which cause chronic pain, postural deformations and limited physical fitness, result in a deterioration of the quality of life [10, 31], and are therefore not conducive to accepting one's health status resulting from the illness. This was confirmed by the statistical analysis of this study, based on which it was determined that the shorter the duration of treatment and the rarer the ailments characteristic of osteoporosis, the better the acceptance of illness by the respondents. However, the strongest (negative) correlation was observed between the frequency of ailments associated with osteoporosis and the key variable. Evers et al. [32] also found that the greater the disability and complaints about bothersome ailments and one's physical fitness, the smaller the acceptance of illness. The negative correlation between the acceptance and the duration of the illness may be due to the fact that the patient had not yet fully come to terms with the illness and, therefore, had not yet fully learned how to cope with it. Conversely, the results of the study by Pawlikowska- Łągód [29] do not indicate a correlation between the acceptance of illness and the frequency of ailments associated with osteoporosis.

Life satisfaction, in other words, is the cognitive component of subjective well-being. It relates to the cognitive process whereby people self-evaluate the quality of their lives based on their own sets of criteria. Studies of life satisfaction among people with chronic conditions appear to be warranted, as long-term illnesses have their impact on all spheres of life [23]. The authors of the presented study have shown that the life satisfaction of the respondents was quite low ( $14.7 \pm 5.6$ ). Drop et al. [33] obtained similar results when studying a group of people treated for chronic obstructive pulmonary illness. The degree of life satisfaction of the studied individuals was also low ( $14.0 \pm 3.2$ ).

Analysis of the presented study demonstrated that, as in the case of acceptance of illness, the older the respondent, the lower the life satisfaction, and the higher the education attained and the better the living conditions, the higher the life satisfaction (these correlations, however, were not very strong). The results of studies found in the literature differ and indicate greater life satisfaction among older people, presumably due to life experience and the ability to analyse and hierarchise their achievements in life [34, 35, 36]. Other studies also indicate that life satisfaction is related to marital status, with the greatest life satisfaction being reported by married people [21, 36, 37, 38]. The current study did not corroborate this, as no statistically significant differences were found between marital status and life satisfaction. It is also worth noting that unlike in the studies mentioned above, in the current study women who had never married reported much greater life satisfaction than those who were married.

As in the case of acceptance of illness, life satisfaction is conditional on the duration of illness and frequency of bothersome ailments. Therefore, in the current study it was found that the shorter the duration of treatment and the rarer the ailments, the greater the life satisfaction. Byra et al. [39] noted a correlation between the duration of illness and life satisfaction, arguing that soon after falling ill, the level of satisfaction tends to decrease, and increases further in the course of illness and its treatment. According to this author, the decrease in life satisfaction results from the awareness of unavoidable changes in the life of an ill person. This, to some

extent, is corroborated by the results of a study by Drop et al. [33], according to whom, while no statistically significant difference exists between the duration of illness and life satisfaction, analysis of mean values leads to the conclusion that life satisfaction is slightly greater in people who have been affected by the illness for more than five years, than in those struggling with it for a shorter period of time.

By affecting all spheres of life, chronic conditions cause suffering and emotional pain. Support from others is a necessary component in the treatment and rehabilitation of chronically ill persons. It is easier for a person surrounded by supportive people to accept the illness or disability, and to come to terms with the new reality, thus regaining the sense of life satisfaction shaken by the illness.

Awareness of the social, mental and spiritual experiences of the ill person serves as a basis for appropriate social support. Support allows ill individuals to become aware of their strength and ability to fight the illness, as well as teaches them confidence in themselves and other people. Falling ill with a chronic condition does not mean that nothing can be done, as with the help of family, friends and specialists, it is possible to devise solutions and coping strategies allowing patients to lead a normal life with the illness, or even achieve full recovery [40].

Notably, however, in the presented study it was found that the support offered by the family did not correlate with the degree of acceptance of illness among osteoporotic women living in rural areas. However, it should be noted that the women who received such support reported markedly greater life satisfaction than those who had experienced no such support. There was also a statistically significant correlation between the support offered by friends and the aforementioned variables. It is also worth noting that the respondents who lived alone and reported worse living conditions were more likely to experience and expect support. Nevertheless, what is of concern is the lack of a significant correlation between the support offered by healthcare professionals and acceptance of illness and life satisfaction. Social ties, networks and support are instrumental for better well-being, subjective sense of health, self-esteem, and even reduce the risk of death, especially among older people who are often affected by chronic conditions. Blazer [41] reports that the lack of social ties, i.e. loneliness, having no life partner or family, constitutes a major risk factor for death. Similarly, according to Joly et al. [28], establishing social contacts and receiving support from family and friends is very important for effective treatment, and can even contribute to increasing life expectancy.

It is also worth stressing that individuals who reported a higher self-assessment of their knowledge of osteoporosis were also more likely to accept their illness and experience greater life satisfaction. This shows that there is a need for health education provided by healthcare professionals.

## CONCLUSIONS

Osteoporotic women living in rural areas reported average acceptance of the illness and a relatively low satisfaction with life. Older age, low level of education, unsatisfactory living conditions, as well as the prolonged duration of the illness, and ailments frequently associated with osteoporosis, all decrease the degree of acceptance of the illness and result

in poorer satisfaction with life. Patients who claimed to have appropriate knowledge of osteoporosis reported greater acceptance of their illness and better life satisfaction. The degree of life satisfaction among women supported by their families was higher than among those respondents who received no such support. Women supported by friends reported a markedly higher acceptance of the illness and life satisfaction than those receiving no such support. What is of concern is that no correlation was observed between the support offered by healthcare professionals and the aforementioned variables.

The study was limited by the small number of respondents, a wide age range, and a limited study area. Therefore, another study should be conducted encompassing more women from the whole of Poland. It also appears pertinent to analyse the poor support offered by healthcare professionals. Appropriate support, provided not only by the relatives, but in particular by healthcare professionals, coupled with health education and improvement of living conditions, should be considered necessary components of the treatment and rehabilitation of osteoporotic patients. A strong point of the study is that it was conducted in respect of a very important and topical subject of osteoporosis, which so far has been underestimated and rarely undertaken by researchers.

The theoretical aim of the study is original, never having been carried out previously in Poland. The cognitive aim was to describe a phenomenon not yet described in the professional literature, to fill this gap, and open further possibilities for investigating the subject and issues arising.

## REFERENCES

- Osteoporosis Prevention, Diagnosis and Therapy NIH Consensus Development Panel on Osteoporosis Prevention, Diagnosis and Therapy. *Jama* 2001; 285: 785–794.
- Siris E, Adler, Bilezikian J, et al. The clinical diagnosis of osteoporosis: a position statement from the National Bone Health Alliance Working Group. *Osteoporos Int.* 2014; 25 (5): 1439–1443.
- Pluskiewicz W. Wskazania do diagnostyki i leczenia osteoporozy pomenopauzalnej – wytyczne endokrynologów amerykańskich 2016. [Indications for postmenopausal osteoporosis diagnosis and treatment – the American endocrinologists' guidelines 2016] *Med. Dypł* 2017; 2: 13–18. (in polish)
- Lorenc R, Glusko P, Franek E, et al. Zalecenia postępowania diagnostycznego i leczniczego w osteoporozie w Polsce. Aktualizacja 2017. [The guidelines of osteoporosis diagnosis and treatment in Poland. Update 2017] *Endokrynol. Pol.* 2017; 68, supl. A:1–18 (in polish)
- Kanis JA, McCloskey E, Johansson H, et al. European guidance for the diagnosis and management of osteoporosis in postmenopausal women. *Osteoporos Int.* 2013; 24(1): 23–57.
- Svedbom A, Hernlund E, Ivergard M, et al. Osteoporosis in the European Union: a compendium of country-specific reports. *Arch Osteoporos.* 2013; 8: 137.
- Sewerynek E, Stuss M. Obowiązujące wskazania do prewencji i leczenia osteoporozy pomenopauzalnej – choroby miliona złamań. [The current recommendations of postmenopausal osteoporosis (the disease of million fractures) prevention and treatment] *Ginekol Perinatol Prakt.* 2016; 1(2): 45–55. (in polish)
- Czerwiński E, Rozpondek P, Synder M, et al. Problem złamań osteoporotycznych. In: Czerwiński E, editor. Osteoporoza problem interdyscyplinarny. [The problem of osteoporotic fractures. In: Czerwiński E, ed. Osteoporosis as an interdisciplinary problem] Warszawa: Wydaw. Lek. PZWL, 2015: 117–130. (in polish)
- Kanis JA. Diagnosis and Clinical Aspects of Osteoporosis. In: Ferrari SL, Roux Ch, editors. Pocket Reference to Osteoporosis. Geneva: Springer Nature Switzerland AG, 2019; 11–20. (eBook) <https://doi.org/10.1007/978-3-319-26757-9>
- Papaioannou A, Kennedy C, Ioannidis G, et al. The impact of incident fractures on health-related quality of life: 5 years of data from the Canadian Multicentre Osteoporosis Study. *Osteoporos Int.* 2009; 20(5): 703–714.
- Heszen I, Sęk H. Psychologia zdrowia. [Health psychology] Warszawa: Wydaw. Nauk. PWN SA, 2007. (in polish)
- Jakubowska-Winecka A, Włodarczyk D. Psychologiczne aspekty choroby i chorowania. [Psychological aspects of illness and disease] In: Jakubowska-Winecka A, Włodarczyk D, editor. Psychologia w praktyce medycznej. [Psychology in medical practice] Warszawa: Wydaw. Lek. PZWL, 2007: 94–125. (in polish)
- Lazarus R, Folkman S. Stress, appraisal and coping. New York 1984.
- Chase B, Cornille T, English R. Life satisfaction among persons with spinal cord injuries. *J Rehabil.* 2000; 66: 14–20.
- Juczyński Z. Narzędzia pomiaru w promocji i psychologii zdrowia. [Assessment and diagnostic instruments for health psychology promotion] Pracownia Testów Psychologicznych PTP, Warszawa 2001. (in polish)
- Sirgy MJ. Materialism and quality of life. *Soc Indic Res.* 1998; 43(3): 227–260.
- Poprawa R. Zasoby osobiste w radzeniu sobie ze stresem. [Personal resources in dealing with stress] In: Dolińska-Zygmunt G, editor. Podstawy psychologii zdrowia. [Basics of health psychology] Wrocław: Wydawnictwo Uniwersytetu Wrocławskiego, 2001: 103–141. (in polish)
- Bishop G.D. Psychologia zdrowia. Zintegrowany umysł i ciało. [Health psychology. Integrated mind and body.] Wrocław: Astrum 2000. (in polish)
- DeLongis A, Folkman S, Lazarus RS. The impact of daily stress on health and mood: Psychological and social resources as mediators. *J Pers Soc Psychol.* 1998; 54: 486–495.
- Felton B, Revenson T. Coping with chronic illness: a study of illness controllability and the influence of coping strategies on psychological adjustment. *J Consult Clin Psychol.* 1984; 52: 343–353.
- Chia-Huei W, Chin-Yu W. Life satisfaction in persons with schizophrenia living in the community. Validation of the satisfaction with life scale. *Soc Indic Res.* 2008; 85: 447–460.
- Diener E, Emmons RA, Larsen RJ, et al. The Satisfaction With Life Scale. *J Pers Assess.* 1985; 49(1): 71–75.
- Pavot W, Diener E. Review of the Satisfaction with Life Scale. *Psychol Assess.* 1993; 5(2): 164–172.
- Vassar M. A note on the score reliability for the Satisfaction with Life Scale: an RG study. *Soc Indic Res.* 2008; 86(1): 47–57.
- Kanis JA, Cooper C, Rizzoli R, et al. European guidance for the diagnosis and management of osteoporosis in postmenopausal women. *Osteoporosis International* 2019; 30: 3–44. <https://doi.org/10.1007/s00198-018-4704-5>
- Fredrickson BI. The role of positive emotions in positive psychology: the broaden and build theory of positive emotions. *Am Psychol.* 2001; 56(3): 218–276.
- Painter P. Physical functioning in end-stage renal disease patients: Update 2005. *Hemodial Int.* 2005; 9: 218–235.
- Joly F, Espie M, Marty M, et al. Long-term quality of life in premenopausal women with node-negative localized breast cancer treated with or without adjuvant chemotherapy. *Br J Cancer* 2000; 83(5): 577–582.
- Pawlikowska-Łagód K, Janiszewska M, Firliej E, et al. Akceptacja choroby kobiet leczących się z powodu osteoporozy. [Acceptance of diseases of women treated for osteoporosis] *J Educ Health Sport* 2016; 6 (5): 139–148. (polish)
- Scholten C, Weinlander G, Krainer M, et al. Difference in patient's acceptance of early versus late initiation of psychosocial support in breast cancer. *Support Care Cancer* 2001; 9: 459–464.
- Cooper M, Palmer A, Seibel M. Cost-effectiveness of the Concord Minimal Trauma Fracture Liaison service, a prospective, controlled fracture prevention study. *Osteoporos Int.* 2012; 23(1): 97–107
- Evers A, Kraaimaat FW, van Lankveld W, et al. Unfavorable thinking: the illness cognition questionnaire for chronic disease. *J Consult Clin Psychol.* 2001; 69(6): 1026–1036.
- Drop B, Janiszewska M, Barańska A. Satisfaction with Life and Adaptive Reactions in People Treated for Chronic Obstructive Pulmonary Diseases. *Adv Exp Med Biol.* 2018; 1114: 41–47. doi: 10.1007/5584\_2018\_242.
- Hultell D, Gustavsson JP. A psychometric evaluation of the Satisfaction with Life Scale in a Swedish nationwide sample of university students. *Pers Individ Dif.* 2008; 44: 1070–1079.
- Chia-Huei W, Grace Y. Analysis of factorial invariance across gender in the Taiwan version of the Satisfaction with Life Scale. *Pers Individ Dif.* 2006; 40: 1259–1268.

36. Lee H, Hwang S, Kim J, Daly B. Predictors of life satisfaction of Korean nurses. *J Adv Nurs J.* 2004; 48(6): 632–664.
37. Arrindell WA, Heesink J, Feij JA. The Satisfaction with Life Scale (SWLS): appraisal with 1700 healthy young adults in The Netherlands. *Pers Individ Dif.* 1999; 26: 815–826.
38. Lesińska-Sawicka M. Wybrane socjomedyczne aspekty jakości życia po 60. roku życia. [Selected sociomedical aspects of quality of life after the age of 60] *Nowoczesne Pielęgniarstwo i Położnictwo* 2007; 1(2). Portal Pielęgniarek i Położnych <http://www.pielegniarki.info.pl> (dostęp: 2019.02.06). (in polish)
39. Byra S. Satysfakcja z życia osób z uszkodzeniem rdzenia kręgowego w pierwszym okresie nabycia niepełnosprawności – funkcje wsparcia otrzymanego i oczekiwanego. [Life satisfaction among patients with spinal cord injury during the first period of acquiring disability – functions of received and expected support] *Med Og Nauk Zdr.* 2011; 2: 64–70. (in polish)
40. Stepulak M. Problemy etyczno-zawodowe psychologa klinicznego pracującego z chorymi terminalnie. [Ethical and professional problems of a clinical psychologist working with terminally ill patients.] In: Makselon J, ed. *Człowiek wobec śmierci.* Kraków: WN PAT, 2005: 77–101. (in polish)
41. Blazer DG. Social support and mortality in an elderly community population. *Am J Epidemiol.* 1982; 115(5): 684–694.



Ministry of Science  
and Higher Education

Republic of Poland

**Generation of the DOI (Digital Object Identifier)** – task financed under the agreement No. 618/P-DUN/2019 by the Minister of Science and Higher Education