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**Impact of illness acceptance on the quality of life in cancer patients
after surgical treatment**

Утицај прихватања болести на квалитет живота после хируршког лечења
код болесника оболелих од рака

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Impact of illness acceptance on the quality of life in cancer patients after surgical treatment

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SUMMARY

Introduction/Objective In Poland, cancers are the second most common cause of death. One in four Poles will have cancer in their life, and one in five will die from it.

The purpose of the study was to assess the acceptance of illness and its impact on the quality of life in surgically treated cancer patients.

Methods The study included 123 cancer patients who had undergone surgical treatment between April and May 2017. The most common were colon (33.3%) and breast cancer (31.7%). 65% of the patients were only treated surgically. The Acceptance of Illness Scale, the WHOQOL-BREF quality of life questionnaire, and an original survey were used.

Results Sixty-two patients (50.4%) presented high illness acceptance levels. More than half of the patients rated their QoL as good (41.5%) or very good (13%). A positive correlation was found between acceptance of illness and quality of life scores in the physical health ($R = 0.351$, $p < 0.001$), psychological ($R = 0.422$, $p < 0.001$), social relationships ($R = 0.525$, $p < 0.001$), and environment domain ($R = 0.533$, $p < 0.001$). In the physical and psychological domains, the correlation had moderate strength, while correlations with the social relationships and environment domains were strong.

Conclusion Higher illness acceptance levels were associated with higher quality of life. Acceptance of illness was not associated with patient age, type of treatment, or repeated surgery. Patients who lived alone had significantly lower quality of life and significantly lower acceptance of illness. Patients who had undergone their first surgery perceived their quality of life in the environment domain significantly lower.

Keywords: acceptance of illness; quality of life; cancer; surgical treatment

САЖЕТАК

Увод/циљ Рак је у Пољској други најчешћи узрок смрти. Један од четири Пољака ће током живота имати рак, а један од пет ће умрети од њега.

Сврха ове студије је да се процени прихватање болести и његов утицај на квалитет живота хируршки лечених болесника оболелих од рака.

Метод Студија је обухватила 123 болесника оболела од рака хируршки лечена између априла и маја 2017. Најчешћи су били рак дебелог црева (33.3%) и рак дојке (31.7%). Шездесет пет посто болесника је лечено искључиво хируршки. Коришћени су Скала прихватања болести, упитник о квалитету живота *WHOQOL-BREF* и оригинална анкета.

Резултати Шездесет два болесника (50.4%) испољила су висок ниво прихватања болести. Више од половине болесника је свој квалитет живота оценило као добар (41.5%) или врло добар (13%). Пронађена је позитивна корелација између прихватања болести и скору у бодовању квалитета живота у доменима физичког здравља ($R = 0.351$, $p < 0.001$), психолошког стања ($R = 0.422$, $p < 0.001$), друштвених односа ($R = 0.525$, $p < 0.001$) и окружења ($R = 0.533$, $p < 0.001$). Са физичким и психолошким доменима корелација је умерена, док је корелација са доменима друштвених односа и окружења јака.

Закључак Виши ниво прихватања болести повезан је са вишим квалитетом живота. Прихватање болести није у вези са старосном доби болесника, начином лечења или понављањем операције. Болесници који су живели сами имали су значајно нижи квалитет живота и значајно ниже прихватање болести. Болесници који су подвргнути првој операцији перципирали су као значајно нижи свој квалитет живота у домену окружења.

Кључне речи: прихватање болести; квалитет живота; канцер; хируршко лечење

INTRODUCTION

As lifespan extends, diseases associated with patients' age are an increasingly common medical problem. According to estimates, one in four Poles will have cancer in their life, and one in five will die from cancer. In 2017 malignant neoplasm caused 98,456 deaths in Poland [1]. In Poland the morbidity rate of cancer is relatively low at 254 cases per 100,000

inhabitants, but the mortality rate of cancer is relatively high at 237 cases per 100,000 inhabitants [1]. In 1972 Kubler-Ross et al. [2] reported that many patients react similarly to the diagnosis, and these reactions are a natural part of adaptation to this difficult life situation. Cancer and its treatment can influence a patient's life during diagnosis and treatment but also years after completion of the treatment. Cancer makes one think of pain, suffering, disability, and often of the loss of one's job and the resulting deterioration of the financial stability. The diagnosis and oncological treatment can result in social isolation and fear of death, and patients often report the feeling of stigma. Literature reports highlight the importance of illness acceptance and its positive impact on quality of life (QoL). Acceptance of illness consists in adopting a positive attitude towards a specific situation or belief. It supports the patient and prevents QoL deterioration in chronic illness [3, 4, 5]. The ability to accept illness is an important issue in the quality of life of cancer patients. Patients must learn how to cope not only with the symptoms, but also with the changes in the quality of life, constraints of independence, and the change of their roles in families and society [6, 7].

The purpose of the study was to assess the acceptance of illness among surgically treated cancer patients, as well as its impact on their quality of life and health satisfaction.

METHODS

Inclusion criteria were: cancer diagnosis; surgical treatment; age >18 y/o; good psychological condition; consent to participate in the study.

Exclusion criteria were: lack of cancer or lack of surgical treatment; age < 18 years; lack of consent to participate; the presence of significant auditory or visual impairments; cognitive impairment precluding the completion of the questionnaire.

Out of 150 patients who met the inclusion criteria, 27 respondents had not completed the questionnaires correctly, or refused the participation in the study without giving any reason. The study was performed on 123 patients (73 women, and 50 men) who underwent surgical treatment for cancer, at the Department of Surgical Oncology of the Wroclaw Regional Specialist Hospital between April and May 2017. Our study was planned to be the observational and cross-sectional research.

Three questionnaires were used in the study: the Acceptance of Illness Scale, adapted for use with Polish patients by Juczyński, the WHOQOL-BREF quality of life questionnaire, and a survey questionnaire developed by the authors, comprising 5 items concerning the patient's socio-demographic characteristics (i.e. gender, age, residence, professional activity, and family situation), and 4 items concerning their clinical status (i.e. type of cancer, treatment methods, number of surgeries, and comorbidities). All the surveys were anonymous.

The Acceptance of Illness Scale (AIS) is a measure of illness acceptance. The scale comprises 8 statements evaluating the negative impact of health impairment. Each statement is scored using a 5-item scale. The respondent selects a number: 1 – strongly agree, 2 – agree, 3 – undecided, 4 – disagree, 5 – strongly disagree. “1” corresponds to poor adaptation to the illness, while “5” to complete acceptance of illness. The total score for one patient ranges between 8 and 40 points. Three score groups were identified: group 1 – low acceptance of illness (8–19 points), group 2 – moderate acceptance of illness (19–29 points), group 3 – good acceptance of illness (30–40 points).

The WHOQOL-BREF questionnaire measures QoL in 4 aspects or domains: physical/somatic (activities of daily living, ability to work, energy, mobility, dependence on medication, pain and discomfort, sleep and rest), psychological (body image, negative and positive feelings, religion, self-esteem, learning, memory, concentration), social relationships (personal relationships, social support, sexual activity), and environment (financial resources, physical and psychological safety and security, freedom, health and social care, opportunities for acquiring new information and skills, home environment, participation in and opportunities for recreation and leisure activities). The questionnaire comprises 26 items, rated using a 5-point Likert scale. Scores in each domain may range from 4 to 20 points. Higher scores correspond to better QoL. Additionally, the WHOQOL-BREF comprises two separate questions, concerning the respondent's overall perceived QoL (question 1) and overall perceived health (question 2) [8].

Bioethics section

The study was approved by the Local Bioethics Committee of the Wrocław Medical University (approval No KB – 228/2017), and the written informed consent was obtained from all the study participants.

Statistical analysis section

The collected data were analyzed in three stages. First, the results of the authors' own survey were presented. Then the patients' acceptance of illness (AIS score) and QoL (WHOQOL-BREF scores) were evaluated, and finally, correlations between AIS and QoL scores were analyzed. Differences between variables were verified using the non-parametric Mann–Whitney U-test and Kruskal–Wallis test. Variable distribution normality was verified using the Shapiro–Wilk test. Correlations were analyzed using Spearman's correlation coefficients. For all the tests, the significance threshold of $p\text{-value} \leq 0.05$ was used. Calculations were performed using the Excel and Statistica software.

RESULTS

The majority of the respondents were in 45–64 years age group (47.1%), lived in urban areas (79.7%), with their families (76.5%), and were professionally active (52.9%). The most common diagnosis were: colon cancer (33.3%), breast cancer (31.7%), ovarian cancer (8.9%), and melanoma (5.7%). Most patients (65%) were treated only surgically. For 65.9% of the patients this had been the first surgery for the cancer, while 34.1% had undergone multiple surgeries. The most common co-morbidities were: hypertension (65.4%), diabetes mellitus (30.8%), and osteoarticular disorders (25.6%) (Table 1).

Acceptance of illness was determined for the entire group. 62 patients (50.4%) had high illness acceptance scores, 33.3% moderate, and 16.3% low scores. Mean AIS score for the entire group was 28.33, SD was 8.02, and median score was 30, which indicates overall moderate acceptance of illness. The lowest score was 9, the highest – 40. In terms of pathology acceptance of illness was better for patients with breast cancer (mean score – 31.06; median – 32.5) and worse for patients with colon cancer (mean score – 18.21; median – 20.0).

No statistically significant age-related differences were found in the acceptance of illness scores (Kruskal–Wallis test: chi-squared $c^2 = 1.554$; $df = 2$; $p = 0.460$). Acceptance of illness did not differ between patient groups distinguished by type of treatment. In patients treated only surgically, median score was 29.50, while in the combination treatment group it was 30.00. The difference was not statistically significant (Mann–Whitney test: $U = 1677.00$; $p = 0.819$). AIS scores were slightly higher in patients having undergone their first surgery for cancer than in those having undergone multiple surgeries (median scores were 30.0 and 26.5, respectively), but the difference was not statistically significant (Mann–Whitney test: $U = 1376.50$; $p = 0.083$).

Marked differences in AIS scores were found when considering the patients' family situation. Patients who lived alone had lower acceptance levels ($Me = 19$) than those who lived with others ($Me = 32$). The difference between these groups was statistically significant (Mann–Whitney test: $U = 825.00$; $p = 0.011$) – Figure 1.

More than half of the patients rated their QoL as good (41.5%) or very good (13.0%). Poor or very poor QoL was reported by 9.7% and 4.1% of patients, respectively. Many patients (31.7%) stated their QoL was neither good nor poor. The highest QoL was reported in the social relationships domain (mean = 14.89; $SD = 3.236$; median = 16.00; max score = 20; min score = 4). Then, in descending order: in the environment domain (mean = 14.51; $SD = 3.270$; median = 15.00; maximum = 20; minimum = 7), in the psychological domain (mean = 13.59, $SD = 2.541$; median = 14.00; max = 18; min = 7), and the lowest in the physical health domain (mean = 12.26; $SD = 2.142$; median = 13.00; max = 18; min = 7). In terms of pathology QoL was better in somatic domain for patients with breast cancer (mean = 14.25; median = 15.5) than for patients with colon cancer (mean = 10.20; median = 11.25). On the contrary, QoL was worse in social domain for patients with breast cancer (mean = 9.55; median = 10.5) than for patients with colon cancer (mean = 15.75; median = 16.50).

No statistically significant differences were found between age groups with regard to QoL in the physical health (Kruskal–Wallis test: chi-squared $c^2 = 1.367$; $df = 2$; $p = 0.505$), psychological ($c^2 = 5.656$; $df = 2$; $p = 0.059$), or social relationships domain ($c^2 = 2.783$; $df = 2$; $p = 0.249$). There was, however, a statistically significant difference in the environment domain ($c^2 = 6.138$; $df = 2$; $p = 0.0461$) (Table 2).

An additional test demonstrated that patients aged 21–44 rated their QoL in the environment domain lower than those aged 45–64 ($p = 0.046$). In the former group, the median score was 14, while in the latter – 16.

QoL in the social relationships domain differed significantly between patients living alone and those living with others (Mann–Whitney test: $U = 897.5$, $p = 0.036$). Those who lived alone rated their QoL in the domain lower ($Me = 13$) than those who lived with their families or partners ($Me = 16$).

The use of treatment other than surgical did not affect the respondents' QoL. No statistically significant differences were found with any of the combined treatment categories ($p > 0.05$).

With regard to the number of surgeries, a statistically significant difference was found with regard to the environment domain score (Mann–Whitney test: $U = 1249$, $p = 0.015$). Patients who had undergone their first surgery rated their QoL in the domain lower than those who had undergone multiple surgeries. In the former group, the median score was 13.5, while in the latter – 16. For other domains, there were no statistically significant observations ($p > 0.05$).

To investigate whether acceptance of illness may affect the QoL of patients undergoing surgical cancer treatment, correlations were calculated for AIS and WHOQOL-BREF scores. Spearman's correlation coefficients were used (as the Shapiro–Wilk test demonstrated that the variables were not distributed normally).

Statistically significant results ($p < .001$) were obtained for all domains, which indicates that acceptance of illness is correlated with QoL in the four domains: physical health ($R = 0.351$), psychological ($R = 0.422$), social relationships ($R = 0.525$), and environment ($R = 0.533$) (Table 3). In all domains, the correlation was positive, indicating that higher levels of illness acceptance were associated with better QoL in the patients studied. The strongest correlation with AIS was found for the environment and social relationships domains, the weakest – for the physical health domain. Correlations were also analyzed between AIS and QoL scores and comorbidities, but no statistically significant results were found.

DISCUSSION

The patient's attitude towards the diagnosis and illness determines their attitude and adherence to treatment [9]. Overall, the respondents presented "moderate" acceptance of illness levels, with a mean AIS score of 28.3. Similar findings were reported by Czerw et al. [6] (mean score 27.56). Other findings from her study from 2014 are also similar to the present results, i.e. the patients' age did not affect AIS scores in either study [6]. Most patients (56.16%) had a moderate acceptance level in a study by Karczmarek-Borowska et al. [10] (compared to 50.4% in the present study), though contrary to Czerw et al. [6], the study found patients younger than 60 to present higher acceptance scores than those who were older. Slightly lower scores were found among cancer patients in a study by Kołpa et al. [11] (25.35 points) and leukemia patients in a study by Wiraszka et al. [12] (23.27). Despite the initial presumption that most cancer patients would have low illness acceptance scores, more than half of the respondents were found to present high illness acceptance (50.4%), and low acceptance was only found for 16.3%. Similar results were obtained by Pawlik et al. [13], who found 46.29% of breast cancer patients to accept their illness, and by Czerw et al. [14], who reported a mean AIS score of 28.45 among breast cancer patients. Higher acceptance levels were found in a study by Łuczyk et al. [15], where 39.43% of breast cancer patients obtained high scores. Religioni et al. [16] also studied prostate cancer patients, who obtained a mean score of 30.39, and therefore were also found to have a "high" level of illness acceptance (although 30 is a borderline score between moderate and high). In patients with colon cancer, Czerw et al. [17] found a mean AIS score of 27.74, which is also similar to the present findings. In our study, 50.4% of the respondents had high acceptance scores, while only 16.3% had low scores.

The standardized WHOQOL-BREF questionnaire allows for studying patients' QoL directly. Similar to our findings were reported in a study on women by Lutgendorf et al. [18], where the patients also predominantly described their QoL as good. Slightly lower results were found in a study by Applewhite et al. [19], who compared thyroid cancer patients to patients with various other cancers (colon cancer, breast cancer, gliomas, and gynecologic tumors). In the entire group, overall QoL was found to be moderate (a score of 5.56 on a scale of 0–10, with 10 denoting the highest QoL) [19]. An analysis of the available Polish literature on the subject shows that women with breast and gynecologic cancers perceive their QoL as good, with a score of 146.99 points in the LQ-C30 questionnaire before treatment,

and 138.59 points after treatment. This indicates that the perception did not change over the entire period of treatment using various methods, as reported by Pietrzyk et al. [20]. A similar observation was made in our study, when comparing QoL between patients treated only surgically and those in whom the surgical treatment was combined with other methods. It is difficult to determine why, despite often very radical treatment, patients maintain relatively good QoL.

The second item of the WHOQOL-BREF concerns the patients' overall perceived health. Our finding may indicate that despite the burden of cancer, patients experience considerably less negative emotions than one could expect.

As described above, the WHOQOL-BREF questionnaire comprises four sections, reflecting the respondents' QoL in specific domains: physical or somatic health, psychological, social relationships, and environment. Our findings reveal small differences in the QoL scores for each domain of a patient's life. Notably, however, the lowest scores were found in the physical health domain, which may be due to the limitations associated with cancer, such as weakness or lifestyle changes recommended to patients after surgery. The highest scores were found in the social relationships domain, indicating that patients felt supported. The importance of social support in adaptation to illness among cancer patients was highlighted by Wyszomirska et al. [21], who also remarked that the availability of support in difficult situations, as perceived by the patient, may be even more important. Moreover, as stated by de Walden-Gałuszko, good psychological QoL in cancer patients depends on their internal development, which increases one's psychological capacity. She also states that development in these aspects not only enhances patients' QoL, but may even make their life fuller and richer than it had been before they fell ill [22].

One of the many aspects of the present study involved the impact of the respondents' age on their QoL. The obtained results demonstrated statistically significant differences only with regard to QoL in the environment domain. The additional test demonstrated that patients aged 21–44 rated their QoL in the environmental domain lower (Me = 14) than those aged 45–64 (Me = 16). Entirely different findings were reported by Viganò et al. [23], describing patients unable to perform daily activities due to considerable weakness, which may directly affect QoL and tolerance of cancer treatment in elderly individuals. Yet another situation is reported in a study by Tobiasz-Adamczyk et al. [24], demonstrating significant differences between younger and older patients with regard to their perception of changes in their

physical status, daily functioning, and performance of social roles. Younger patients experienced more restrictions due to disease symptoms. In older patients, limitations in daily living were found to be correlated to anxiety levels [24].

No statistically significant correlations between comorbidities and AIS and QoL scores were found in our study. This may be related to the low prevalence of multimorbidity in the study group. Contrary results were obtained by Zielińska-Więczkowska and Żychlińska [25], though respondents in their study were aged above 60. These authors found patients with comorbidities to have higher cancer acceptance.

The relationship between acceptance of illness and QoL was an important objective of our study. All the authors emphasize the impact of illness acceptance on patients' lives. Beside interventions to improve their clinical condition, improvement of patients' QoL requires psychological support, as the psychological domain was one where patients obtained lower scores (13.59) compared to the social relationships (14.89) and environment (14.51) domains. However, studies on the subject seldom include cancer patients, because these patients are a distinct group that is often difficult to work with. The present results demonstrate correlations between acceptance of illness and QoL in all the analyzed domains. Namely, the higher the patient's illness acceptance level, the higher their QoL, and vice versa – patients with better QoL have more acceptance for their illness. Zielińska-Więczkowska and Żychlińska [25] found a similar association for the psychological domain, whereas Ślusarska et al. [26], studying lymphoma patients, reported higher values for all domains.

The limitation of our study. Due to small numbers of different cancer types our paper was not focused on one particular type of cancer, but on the surgical patients with cancer in general.

CONCLUSION

1. Acceptance of illness was not associated with patient age, type of treatment, or repeated surgery. Higher illness acceptance levels were associated with higher quality of life scores in all four domains in surgically treated cancer patients.

2. Patients who lived alone had significantly lower quality of life scores in the social relationships domain and significantly lower acceptance of illness.
3. Patients who had undergone their first surgery perceived their quality of life in the environment domain as significantly lower compared to those who had undergone multiple surgeries. Patients aged 21–44 had significantly lower quality of life scores in the environment domain.

Conflict of interest: None declared.

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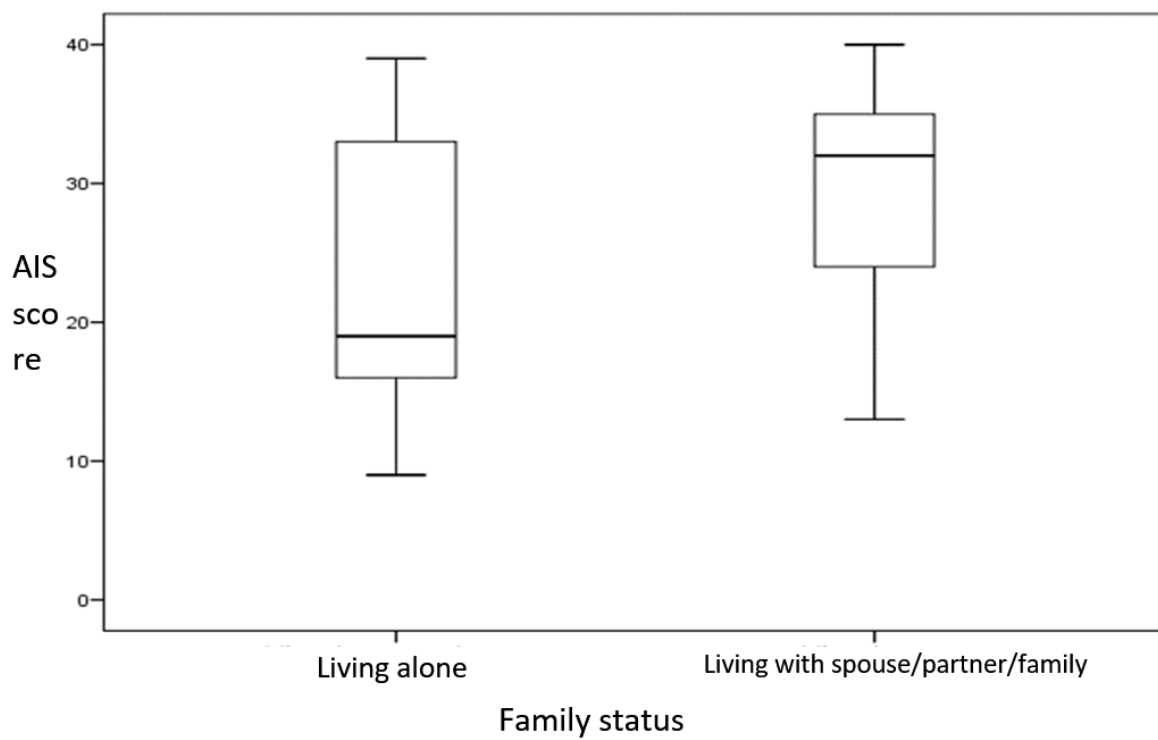


Figure 1. Acceptance of illness and family status

Table 1. The demographic data of the study group

Variable	Study group (n = 123)
Sex	
men	50 (40.7%)
women	73 (59.3%)
Age	
21-44	29 (23.6%)
45-64	58 (47.1%)
> 65	36 (29.3%)
Place of residence	
city	98 (79.7%)
country	25 (20.3%)
Professional activity	
professionally active	65 (52.9%)
retired	33 (26.8%)
disability pensioners	16 (13%)
unemployed	9 (7.3%)
Family status	
live with families	94 (76.5%)
live alone	26 (21.1%)
live in residential care institution	3 (2.4%)
Type of cancer	
colon cancer	41 (33.3%)
breast cancer	39 (31.7%)
ovarian cancer	11 (8.9%)
melanoma	7 (5.7%)
thyroid cancer	5 (4.1%)
kidney cancer	5 (4.1%)
prostate cancer	3 (2.4%)
pancreatic cancer	3 (2.4%)
lung cancer	2 (1.6%)
other	7 (5.7%)
Treatment	
surgery only	80 (65%)
with chemotherapy	31 (25.2%)
with radiotherapy	15 (12.2%)
with hormone therapy	6 (4.9%)
Number of surgeries	
first	81 (65.9%)
multiple	42 (34.1%)
Co-morbidities	
hypertension	51 (65.4%)
diabetes mellitus	24 (30.8%)
osteoarticular disorders	20 (25.6%)
thyroid disorders	13 (16.7%)
heart disease	13 (16.7%)
psychological disorders	7 (9%)
kidney diseases	3 (3.8%)

Table 2. Correlations between respondents' age and quality of life (QoL)

QoL	21–44 y/o			45–64 y/o			more than 65 y/o			Test result
	Me	Min.	Max.	Me	Min.	Max.	Me	Min.	Max.	
QoL in the physical health domain (scale: 4–20)	13	7	15	13	8	15	12	7	18	$\chi^2 = 1.367$ df = 2 p = 0.505
QoL in the psychological domain (scale: 4–20)	14	7	16	15	8	18	13	9	18	$\chi^2 = 5.656$ df = 2 p = 0.059
QoL in the social relationships domain (scale: 4–20)	16	5	20	16	4	20	15	5	20	$\chi^2 = 2.783$ df = 2 p = 0.249
QoL in the environment domain (scale: 4–20)	14	7	18	16	8	20	14	8	20	$\chi^2 = 6.138$ df = 2 p = 0.046

df – degrees of freedom; Me – median

Table 3. Correlation between Acceptance of Illness Scale (AIS) and Quality of Life (QoL) scales.

Acceptance of Illness Scale (AIS)		
QoL	Spearman's correlation coefficient	
	R	p
QoL in the physical health domain (scale: 4–20) * AIS score	0.351	< 0.001
QoL in the psychological domain (scale: 4–20) * AIS score	0.422	< 0.001
QoL in the social relationships domain (scale: 4–20) * AIS score	0.525	< 0.001
QoL in the environment domain (scale: 4–20) * AIS score	0.533	< 0.001