

Medical factors determining the quality of life of patients with Crohn's disease

Czynniki medyczne determinujące jakość życia pacjentów z chorobą Leśniowskiego-Crohna

Kamila Rachubińska¹, Dorota Wnuk², Alicja Jeżuchowska¹, Dominika Kaska¹, Anita Rybicka³, Szymon Grochans⁴, Marzanna Stanisławska³, Elżbieta Grochans³

¹Doctoral Studies, Pomeranian Medical University, Szczecin, Poland
Head of the Studies: Elżbieta Grochans PhD, Prof. PMU

²Student Scientific Circle at the Nursing Department, Faculty of Health Sciences, Pomeranian Medical University, Szczecin, Poland
Head of the Department: Elżbieta Grochans, PhD, Prof. PMU

³Department of Nursing, Faculty of Health Sciences, Pomeranian Medical University, Szczecin, Poland
Head of the Department: Elżbieta Grochans, PhD, Prof. PMU

⁴Student, Warsaw University Medical, Warsaw, Poland
Dean of the University: Prof. Mirosław Wielgoś MD, PhD

Medical Studies/Studia Medyczne 2018; 34 (3): 211–217

DOI: <https://doi.org/10.5114/ms.2018.78684>

Key words: quality of life, Crohn's disease, medical factors.

Słowa kluczowe: jakość życia, choroba Leśniowskiego-Crohna, czynniki medyczne.

Abstract

Introduction: Crohn's disease is a chronic condition that affects the functioning and life of the patients. Quality of life of patients affected by the disease is of particular importance because it allows better functioning in all dimensions of life. It is essential to identify the numerous factors that affect the patients' quality of life.

Aim of the research: To search for medical factors that influence the quality of life of patients affected by Crohn's disease.

Material and methods: The study was conducted using a diagnostic survey. The study group comprised 100 adult patients with Crohn's disease hospitalised in the Gastroenterology Clinic of the Autonomous Public Hospital Complex No.1 of Pomeranian Medical University in Szczecin. The study was conducted in accordance with the Declaration of Helsinki. The standardised quality of life questionnaire SF-36v2 and an original questionnaire were used. The collected data were statistically analysed.

Results: The analysis demonstrated a statistically significant effect of disease duration on quality of life as regards social functioning and mental health ($p < 0.05$). The course of the disease was found to affect all domains and dimensions of quality of life ($p < 0.05$). Treatment modality had a statistically significant influence only on the domain of physical functioning ($p < 0.05$). The number of hospitalisations in the year preceding the study was found to have a significant effect only on particular domains ($p < 0.05$).

Conclusions: The course of the disease had the most significant effect on the quality of life of patients with Crohn's disease. Other significant factors are determining the tailored method of treatment and disease duration.

Streszczenie

Wprowadzenie: Choroba Leśniowskiego-Crohna należy do przewlekłych schorzeń, które wpływają na funkcjonowanie i życie chorych. Duże znaczenie ma dobra jakość życia chorych, ponieważ umożliwia lepsze funkcjonowanie we wszystkich wymiarach. Istotne jest poznanie różnych czynników, które wpływają na ocenę jakości życia.

Cel pracy: Określenie czynników, które oddziałują na jakość życia pacjentów z chorobą Leśniowskiego-Crohna.

Materiał i metody: Badania prowadzono metodą sondażu diagnostycznego wśród 100 dorosłych pacjentów z chorobą Leśniowskiego-Crohna hospitalizowanych w Klinice Gastroenterologii Samodzielnego Publicznego Szpitala Klinicznego nr 1 Pomorskiego Uniwersytetu Medycznego w Szczecinie, zgodnie z zasadami deklaracji helsińskiej. Zastosowano standaryzowany kwestionariusz do oceny jakości życia SF-36v2 oraz kwestionariusz w formie własnej ankiety. Zebrany materiał poddano analizie statystycznej.

Wyniki: Wykazano statystycznie istotny wpływ czasu trwania choroby na ocenę jakości życia w zakresie funkcjonowania społecznego i zdrowia psychicznego ($p < 0,05$). Przebieg choroby oddziałował na wszystkie domeny i wymiary jakości życia

($p < 0,05$), natomiast metoda leczenia statystycznie istotnie wpływała tylko na funkcjonowanie fizyczne ($p < 0,05$). Liczba hospitalizacji badanych w ostatnim roku miała istotny wpływ tylko w wybranych domenach ($p < 0,05$).

Wnioski: Przebieg choroby w największym stopniu oddziaływał na jakość życia pacjentów z chorobą Leśniowskiego-Crohna. Istotnymi czynnikami były metoda leczenia oraz czas trwania choroby.

Introduction

Crohn's disease is characterised by a transmural inflammatory process, which may affect any part of the gastrointestinal tract from the mouth to the anus. This increasingly common disease mostly affects young people entering adulthood. The experience of being diagnosed with a chronic disease can be traumatic because the patient must learn to live with the life-long disease [1].

Once a chronic disease is recognised and diagnosed, the patient is affected by it throughout their entire life. Crohn's disease can negatively affect day-to-day functioning of patients leading to a decline in the quality of life and disease acceptance.

Nowadays, contemporary medicine and nursing is concerned not only with providing treatment but also with improving the quality of life of patients suffering from a chronic condition. There are several components of global quality of life, namely: the somatic state, general physical condition, mental wellbeing, emotions, and social relations. Assessment of the quality of life provides an insight into aggravation of disease symptoms experienced by the patient and the extent of the negative effects it may have on the comfort of everyday life. The World Health Organisation (WHO) defines the quality of life as "the individuals' perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards, and concerns" [2]. In medicine and nursing, the concept of the quality of life relates to specific domains, i.e. physical, mental, and social domains – dimensions of health. In the era of intense scientific progress and continued development of new therapies, the process of effective treatment is focused not only on maintaining the health of patients but also correlates with factors such as: satisfying the basic living needs of patients, providing a sense of security and mental wellbeing in accordance with Maslow's hierarchy of needs [3].

Aim of the research

The aim of the study was to search for medical factors (course of the disease, treatment modality, duration of the disease, the number of hospitalisations) determining the quality of life of patients suffering from Crohn's disease.

Material and methods

The study was conducted in 2017 in the Gastroenterology Clinic of the Autonomous Public Hospital Complex No. 1 of the Pomeranian Medical University in Szczecin. Prior to conducting the research, writ-

ten consent was obtained from the aforementioned health institution. The study was conducted in accordance with the Declaration of Helsinki. The research received a positive opinion from the Bioethical Commission on 7.06.2016.

The study group comprised 100 patients suffering from Crohn's disease (55 women, 45 men). A diagnostic survey with the following research tools was used for the purpose of obtaining the study material: an original questionnaire containing questions regarding the socio-demographic and selected medical data, and the SF-36v2 health survey concerned with subjective health assessment containing 34 questions belonging to eight categories. The quality of life index is the sum of points obtained in all eight scales. It allows the general assessment of health. The categories are grouped into two scales, i.e. the physical and mental dimensions of life quality. The analysed categories represent the dimensions that have been particularly affected by the disease.

Statistical analysis

Data was collected and subjected to preliminary calculations and modification using a Microsoft Excel 2007 PL spreadsheet. The statistical analysis was performed with the use of IBM SPSS ver. 22 software. The assessment of conformity of distribution of the analysed quantitative features with the normal distribution was done using Shapiro-Wilk test. Pearson's r correlation coefficient was applied when all the scales were quantitatively calculated and the distribution of the variables were close to normal distribution. When the assumptions of normality of distribution or ordinal character of the variables were not met, Spearman's correlation coefficient was used. For the data showing normal distribution or non-parametric data, Kruskal-Wallis ANOVA was used. The aforementioned are used for testing observations that are determined by one or more simultaneous factors. The level of statistical significance was set at $p < 0.05$.

Results

Description of the study group

The study group was varied in terms of gender of the participants. More than half of the study group were females (55%). Most of the patients, i.e. 45%, were residents of cities of up to 100,000 in population. The majority of the study group, i.e. 40%, declared to be involved in a non-marital relationship. The age at di-

agnosis of Crohn's disease ranged from 12 to 54 years, with a mean of 24.4 ± 8.1 years. The duration of the disease was from one month to 27 years and 2 months. Mean duration of the disease was 7.8 ± 4.6 years. More than half of the respondents, i.e. 53%, were diagnosed 5-9 years prior to the study. In terms of the number of cases of disease exacerbation per year, 41% of patients were in remission. Complications of Crohn's disease occurred in 15% of patients (anal fistula). In terms of treatment modality, 66% of patient underwent mixed treatment. The average number of hospitalisations among the patients with Crohn's disease in the year preceding the study was 2.3 ± 3.6 . In the study group, the number of hospitalisations ranged from 0 to 33. Thirty percent of the study group required hospitalisation only once (Table 1).

The analysis of data concerning the quality of life obtained with the use of SF-36v2 health survey showed that the highest quality of life was identified in the following domains: physical condition – 78.5 ± 17.2 points, role limitations due to emotional state – 74.17 ± 20.12 points, role limitations in physical functioning – 63.38 ± 20.37 , and the physical dimension of the quality of life. The participants obtained the lowest results concerning the following: vitality, general health condition, and social functioning. Apart from determining eight domains of quality of life, SF-36v2 was used to assess two domains: in the physical dimension the mean score was 61.41 ± 16.11 points, and in the mental domain it was 55.40 ± 11.19 , which indicates impaired functioning regarding this dimension.

Table 1. Description of the test group

Parameter	N	%
Sex:		
Woman	55	55
Men	45	45
Age [years]:		
18–19	5	5
20–29	33	33
30–39	45	45
40–49	29	29
50 and more	2	2
Marital status:		
Informal relationship	40	40
Formal relationship	35	35
Free	25	25
Education:		
Basic	2	2
Professional education	57	57
Secondary education	18	18
Higher	23	23
Structure of the course of Crohn's disease in the study participants		
Variable:	N	%*
Tightening up to 3× a year	31	31
Hardenings above 3× a year	9	9
Remission of the disease	41	41
Presence of complications (perirectal fistulas)	15	15
No complications	9	9
Other	4	4

Variable	N	%*
Structure of the applied treatment in Crohn's disease:		
Steroid therapy	8	8
Immunosuppression	11	11
Mixed	66	66
Biological treatment	27	27
Surgical treatment – surgery	9	9
Other	1	1
Structure of the duration of Crohn's disease in Leśniowski:		
Less than 5 years	24	24
5–9 years	53	53
10–15 years	17	17
Over 15 years	6	6
Structure of the number of hospitalisations due to Crohn's disease:		
0	21	21
1	30	30
2	66	66
3	15	15
4 and more	14	13
The structure of the age at diagnosis of Crohn disease – Crohn's disease:		
Below 20 years old	30	30
Between 20 and 29 years old	46	46
Between 30 and 39 years old	17	17
Over 40 years old	7	7

N – number; *multiple choice question, percentages do not add up.

The analysis showed a statistically significant effect of the duration of disease on the assessment of quality of life in terms of social functioning ($p = 0.04$) and mental health ($p = 0.024$). This correlation is negative and its strength is weak but pronounced. The longer the patient had been affected by Crohn's disease, the lower was the score of quality of life in the aforementioned domains. As for the remaining domains, duration of the disease showed no influence on the assessment of quality of life ($p > 0.05$).

It was found that the course of the disease had a significant effect on the quality of life in all domains and dimensions as identified with SF-36v2. Statistically significant differences were found between the scores of quality of life. The patients in remission or without any complications of Crohn's disease exhibited much better quality of life than the patients who experienced three or more cases of disease exacerbation in a year. By far the lowest score in terms of quality of life was found in the patients with more than three cases of disease exacerbation in a year ($p < 0.05$) (Table 2).

The analysis revealed that treatment modality had a statistically significant effect on the quality of life of patients with Crohn's disease in terms of physical functioning. The patients undergoing steroid therapy obtained the highest scores in this domain of quality of life (Me = 95). The patients undergoing immunosuppressive and mixed treatment showed poorer functioning (Me = 85), similarly to the patients after biological treatment (Me = 72.5). The worst quality of life score in terms of physical functioning was iden-

tified among surgically treated patients (Me = 67.5); ($p = 0.01$). As for the remaining spheres and dimensions of quality of life, no statistically significant differences due to modality of treatment were found ($p > 0.05$) (Table 3).

The analysis showed a statistically significant difference in terms of the number of hospitalisations in the year preceding the study and the quality of life in the dimension of physical functioning ($p = 0.002$), role limitations in physical functioning ($p < 0.001$), bodily pain ($p < 0.001$), general health ($p = 0.001$), and the physical dimension of quality of life ($p < 0.001$). This correlation is negative and its strength is weak but pronounced. An increase in the number of hospitalisations has a negative impact on the quality of life in terms of physical functioning, role limitations in physical functioning, bodily pain, and general health. The strength of the relationship between the number of hospitalisations in the year preceding the study and the physical dimension of quality of life is high ($r = -0.416$). The analysis showed that quality of life of patients in the study group markedly decreases with an increase in the number of hospitalisations in a year. As for the remaining domains, the number of hospitalisations showed no effect on the assessment of quality of life ($p > 0.05$) (Table 4).

Discussion

Crohn's disease is a chronic and incurable condition characterised by alternating periods of relapse and remission. The vast array of intestinal as well as non-intestinal symptoms accompanying the disease

Table 2. Correlation between the course of the disease and quality of life (SF-36v2) of patients with Crohn's disease

Quality of life	Course of the disease					ANOVA Kruskal-Wallis	
	Up to 3 relapses per year Median	More than 3 relapses per year Median	Remission Median	With complications Median	No complications Median	H	P-value
PF	70	60	90	82.5	75	19.437	0.001
RP	62.5	37.5	75	50	87.5	21.742	< 0.001
BP	37.5	25	75	62.5	62.5	28.622	< 0.001
GH	36.5	31.5	51.5	51.5	51.5	14.802	0.005
VT	31.25	25	43.75	50	56.25	16.101	0.003
SF	50	50	50	62.5	50	14.369	0.006
RE	75	50	83.33	66.67	100	11.695	0.020
MH	45	35	60	55	65	12.577	0.014
FH	50.69	41.25	71.94	64.28	68.19	27.284	< 0.001
MH	49.17	40	57.5	59.01	67.81	15.338	0.004

PF – physical functioning, RP – role limitations in physical functioning, BP – bodily pain, GH – general health, VT – vitality, SF – social functioning, RE – role limitations due to emotional state, MH – mental health, FH – physical dimension of quality of life, MH – mental dimension of quality of life, H – ANOVA Kruskal-Wallis test, p – statistical significance coefficient.

Table 3. Correlation between treatment modality and quality of life (SF-36v2) of patients with Crohn's disease

Quality of life	Treatment modality					ANOVA Kruskal-Wallis		
	Steroid therapy Median	Immuno-suppression Median	Mixed Median	Biological Median	Surgical Median	H	df	P-value
PF	95	85	85	72.5	67.5	13.287	4	0.01
RP	68.75	62.5	68.75	50	50	7.736	4	0.102
BP	62.5	50	62.5	50	43.75	2.87	4	0.58
GH	56.5	30.75	51.5	46.5	20.75	6.892	4	0.142
VT	50	37.5	37.5	43.75	18.75	4.585	4	0.333
SF	56.25	50	50	50	50	2.412	4	0.661
RE	58.33	70.83	75	75	70.83	2.027	4	0.731
MH	52.5	57.5	50	65	45	5.207	4	0.267
FH	70.69	62.06	65.84	58.31	45.5	9.286	4	0.054
MH	54.27	54.74	57.14	61.93	46.15	3.931	4	0.415

PF – physical functioning, RP – role limitations in physical functioning, BP – bodily pain, GH – general health, VT – vitality, SF – social functioning, RE – role limitations due to emotional state, MH – mental health, FH – physical dimension of quality of life, MH – mental dimension of quality of life, H – ANOVA Kruskal-Wallis test, p – statistical significance coefficient.

may lead to disability not only in the physical domain but also in the psychosocial sphere [4].

The study clearly demonstrates that patients in remission are characterised by a higher assessment of quality of life as compared with patients who experienced at least one exacerbation of the disease. The results obtained in the course of this study are in line with the findings by other authors. Spanish researchers, Casellas *et al.*, conducted studies in several hospitals and confirmed that quality of life is lower in patients during relapse as compared with those in remission [5]. There are also Polish studies by Andrzejewska *et al.* focusing on the analysis of overall quality of life among patients with Crohn's disease. The results of statistical analysis included therein showed that decreased quality of life is characteristic for patients who are in an active phase of the disease rather than in remission [6]. However, different results were obtained by Rubin *et al.*, who conclude that the phase of a disease experienced by a patient has no significant effect on the quality of life. In this study, the quality of life was found to be significantly reduced both in patients who were in remission as well as those in relapse [7]. When commenting on the aforementioned results it is important to take into consideration the influence of the frequency of hospitalisation, occurrence of intestinal symptoms, and treatment modalities offered to patients in different phases of the disease on the quality of life. In the results obtained by researchers from Warsaw, Jakubowski *et al.* clearly demonstrate the consistent and increasing trend in the frequency of hospitali-

Table 4. Correlation between the number of hospitalisations in the year preceding the study and quality of life (SF-36v2) of patients with Crohn's disease

Variable	r	P-value
Physical functioning	-0.309	0.002
Role limitation in physical functioning	-0.399	< 0.001
Bodily pain	-0.351	< 0.001
General health	-0.338	0.001
Vitality	-0.185	0.065
Social functioning	0.071	0.483
Limitations due to emotional state	-0.134	0.183
Mental health	-0.158	0.117
Physical dimension of quality of life	-0.416	< 0.001
Mental dimension of quality of life	-0.161	0.11

p – statistical significance coefficient, r – Spearman's correlation coefficient.

sations due to Crohn's disease, particularly in men aged 0–39 years. Among women, an increase in the number of hospitalisations due to Crohn's disease was recorded in the period 2003–2007 [8]. Also, data obtained as part of our own research based on the analysis of medical records of patients with Crohn's disease treated in the Gastroenterology Clinic of Pomeranian Medical University in Szczecin show an increasing trend in the number of hospitalisations

in a year. Each hospitalisation of a patient suffering from Crohn's disease is most commonly due to exacerbation of symptoms. This translates into a given number of days on which the patient is temporarily unable to work and, consequently, needs to rely on sickness benefit. Such a situation, which is beyond the control of the patient, seems to have a profoundly negative effect on quality of life [9, 10].

As was demonstrated in our own research, another factor that affects quality of life of patients with Crohn's disease is treatment modality. The participants of the present study undergoing steroid therapy as a treatment of choice showed a much higher level of quality of life as compared with patients who underwent surgical procedure. The analysis of the influence of the method of treatment on the quality of life of Crohn's disease patients by Chrobak-Bień *et al.* produced the same results [11]. Moreover, the study by Bączyk *et al.* indicates that quality of life is lower in patients who received surgical treatment as compared to patients receiving conservative treatment in an internal medicine department [12]. Further consideration of the factors that might have a negative effect on quality of life must also include the occurrence of intestinal and non-intestinal clinical symptoms. According to Casellas *et al.*, bodily pain and discomfort greatly affect the quality of life of patients. More than half of the respondents (65.9%) experienced abdominal pain and discomfort during the active phase of the disease [13]. Moreover, Sakson-Słomińska *et al.* observed that the frequency of experienced intestinal symptoms had a negative effect on quality of life – the level of quality of life was found to decrease with increasing frequency of the symptoms [14]. Schirbel *et al.* conducted a study on 179 patients suffering from Crohn's disease and concluded that abdominal pain is a significant factor leading to decreased quality of life, regardless of the phase of the disease [15].

In multidisciplinary therapy of Crohn's disease, apart from pharmacological, surgical, and psychological treatment, an important role is played by nutritional therapy, which is at times omitted or neglected. Nutritional treatment helps to maintain remission and, when applied improperly, can contribute to aggravation of symptoms, shorten the remission period, and negatively affect the quality of life [16]. The results of our own studies do not confirm the effect of diet used in IBD I and II on the patients' quality of life because most of the respondents (63%) followed and adhered to the dietary recommendations. Also, the study by Marcinkowska *et al.* shows that nutritional status had no influence on quality of life of the respondents [17]. Nutritional therapy is an important element of treatment, both in terms of prevention as well as treatment of secondary malnutrition and correcting the water-electrolyte, acid-base, and vitamin imbalance [18]. According to Grzybowska, there is a strong correlation

between the intake of carbohydrates and lipids and simultaneously occurring reduced consumption of fruit, vitamin C, and magnesium and occurrence of symptoms of Crohn's disease [16].

The analysis of the results obtained in the course of the present study clearly shows that the participants were characterised by decreased functioning in the mental dimension (55.40 ±11.19), as compared with the physical dimension of quality of life (61.41 ±16.11). A similar view was presented by a group of Swedish researchers, who concluded that the most frequent complaint reported by the participants suffering from Crohn's disease was related to lack of vitality and exacerbation of symptoms, particularly bodily pain [19].

Conclusions

Disease activity has a negative effect on quality of life during relapse. The need for hospitalisation results in a reduced social role of the patients. Treatment modality has an effect on the quality of life of patients affected by Crohn's disease. The benefits of conservative treatment translate into a physical functioning dimension of quality of life and outweigh the benefits of invasive treatment.

Conflict of interest

The authors declare no conflict of interest.

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Address for correspondence:

Kamila Rachubińska

Doctoral Studies

Pomeranian Medical University

ul. Żołnierska 48, 71-210 Szczecin, Poland

Phone: +48 72 159 67 64

E-mail: k.rachubinska@gmail.com