Quality of life and emotional functioning in selected cardiovascular diseases

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Abstract

Background: Numerous psychosomatic diseases, especially cardiovascular, are regarded as diseases of modern civilisation. Psychological factors play a dominant role in these diseases. Among these factors we can distinguish several different types of emotional functioning and subjective estimation of patients’ quality of life (QoL).

Aim: To assess the level of QoL and types of emotional functioning among patients suffering from ischaemic heart disease (IHD) and hypertension.

Methods: A group of 160 male patients was subjected to examinations. They were divided into two groups: IHD with hypertension (120 patients) and a control group (40 healthy patients). In the examination the Emotional Control Questionnaire by Brzeziński (KKE) was applied together with Life Quality Test SF-36 and with a personal questionnaire.

Results: Approximately 25% of patients had low QoL. The mean QoL was lower than in healthy subjects (p < 0.05). Also parameters of emotional functioning were significantly lower in patients than in controls (p < 0.05). Significant correlations were found between level of QoL and several types of emotional functioning (p < 0.05, p < 0.01 and p < 0.001).

Conclusions: 1. Quality of life level among psychosomatic patients is significantly lower than in healthy individuals. 2. Quality of life level is closely related to emotional functioning of the studied individuals. 3. Among psychosomatic patients lower level of QoL is accompanied by higher intensity of negative emotional functioning schemes.

Key words: quality of life, emotions, hypertension, ischaemic heart disease

Introduction

Every disease and the method of its treatment affect not only physical, but also psychological and social aspects of a patient. It can be postulated that deterioration of health status influences to some extent biopsychosocial functioning of the individual. Somatic disease becomes a source of stress and numerous negative emotions for the patient and his family. Among those negative emotions anxiety is often a dominating factor. It has a varying character, e.g. anxiety about suffering, anxiety about pain-related treatment, anxiety about physical disability, anxiety about worsening relations with relatives, death anxiety, etc. Anxiety is a background for other emotional states, such as sadness and depression. All of the emotions mentioned above may become apparent in any of the consecutive phases of the disease, from the onset of symptoms through diagnosis, treatment, remission until recurrence [1]. A tendency toward specific emotional reactions may be described as a chronic personality trait affecting perception of personal health status.

In health psychology, disease is considered not only as a stress generating situation, but also as a situation requiring introduction of adequate coping strategies. Adaptation to disease (irrespectively of its severity and duration) is defined as a whole set of cognitive and behavioural reactions originating from subjective assessment of the consequences of the disease in all areas of life. These reactions are directed at restraining both external and internal environmental demands which are considered by the patient as difficult or exceeding his possibilities. The aim of coping is to minimize the disrupting influence of disease on other aspects of life and to reduce concomitant negative emotions [2, 3].

In the last several years in medicine as well as in psychology the term quality of life (QoL) has been increasingly popular [4]. In the 1980s Till, McNeil and Busch...
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Methods

The aim of the study was to evaluate the QoL level and features of emotional functioning in patients suffering from hypertension (HT) complicated by ischaemic heart disease (IHD). The group of cardiological patients included patients treated because of hypertension (HT) complicated by ischaemic heart disease (IHD). The disease was diagnosed by a physician, a specialised cardiologist. Mean time of disease duration was 4.56 years. Patients with a history of myocardial infarction (MI) and/or stroke were excluded from the study. There were no additional chronic diseases or addictions among studied patients. Fundoscopic examination was used to assess the degree of HT. Hypertensive retinopathy was classified according to the four-point Keith-Wegener-Barker scale [20]. Coronary artery disease (CAD) was diagnosed using the Canadian Cardiovascular Society (CCS) classification [21, 22]. For the purpose of this analysis the authors of the study did not differentiate the study group according to severity of CAD and HT. We also did not interfere with the diagnosis and treatment at any point of the study. Information on the course of the disease and its duration was derived from treating physicians, medical records or directly from the studied patients.

Control subjects

Characteristics of the control group was as follows:
• mean age – 52 ± 12 years,
• education – no subjects with basic education, 7 people with basic occupational education, 22 with college education and 11 people with academic education,
• place of residence – 5 people living in the countryside, 18 in cities below 50 thousand inhabitants and 17 people in cities with more than 50 thousand inhabitants.

Each studied patient gave written consent for participation in the study according to the protocol approved by the Ethical Committee.

Psychological and QoL assessment

1. Personal questionnaire – it was constructed for this particular study and used to collect patients’ demographic data and to obtain information on other variables analysed in the study.
2. Life Quality Test SF-36 (The Medical Outcomes Study 36-Item Short Form Health Survey) – it consists of eleven questions evaluating quality of life of studied patients in terms of: general health (SF-wg), physical fitness (SF-sf), change in health status (SF-zdr), change in health status during the last year (SF-zdr-2) and social activity (SF-as) [7, 23, 24]. To assess the QoL standard crude results of the SF-36 questionnaire were transformed into a 10 point sten scale after calculations. According to this scale [mean value = 5.5, standard deviation (SD) = 2.0] the upper
results are located between 7 and 10 sten and indicate a high level of QoL; lower results in turn are located between 1 and 4 sten and indicate a low level of QoL. Crude results of each scale of SF-36 questionnaire were statistically edited to allow transformation to values of the sten scale with means of a table described by Canfield [25].

3. Emotional Control Questionnaire – elaborated by J. Brzezinski to allow characteristics of emotional functioning in 5 categories:
1) emotion expression control (Ke),
2) emotional-rational motivation (Mer),
3) emotional resistance (Oe),
4) situation control (Ks),
5) emotional excitability (Pe).

This scale serves as a tool to measure individual capability to control external manifestations of experienced emotions, the type of individual motivation – the pattern of personal behaviour control, capability to override the developing emotional process – lack of self-deconstruction, capability of an individual to control emotogenic situations, their correct perception and interpretation as well as measurement of the general emotional excitability threshold. Results of the above questionnaire are also expressed by means of a sten scale [26].

Statistical analysis
Statistical analysis was performed using descriptive, non-parametric and parametric statistics. A $\chi^2$ independence test was used to assess homogeneity of defined groups in terms of the analysed parameters. Statistical analysis of presented data did not show significant differences between studied groups in relation to the analysed parameters. The significance threshold was set at $p < 0.05$.

Results
Distribution of the studied population according to the global index of QoL (SF-36-G) is presented in Figure 1.

These results show that around 25% of patients in the studied population were characterised by a low level of QoL. The differences between patients and healthy controls were significant ($p < 0.05$). Similar results were obtained for the upper results of the analysed scale ($p < 0.05$).

Mean values and standard deviations of the consecutive SF-36 questionnaire scales in the studied groups are presented in Table I.

Both global and other aspects comprising level of QoL were significantly different in healthy individuals and patients with cardiovascular disease. In all scales, except one concerning health assessment during the last year ($p < 0.05$), a $p$ value was $< 0.001$.

Distribution of mean values and standard deviations of the Emotional Control Questionnaire scales in the analysed groups is presented in Table II. The studied patients had significantly different results than healthy individuals. The greatest differences were seen for emotional excitability, emotional control and emotional-rational motivation ($p < 0.001$). For other scales – concerning emotional resistance and situation control – there were also significant differences ($p < 0.05$ and $p < 0.01$, respectively).

The relation between level of QoL and emotional functioning is presented in Table III. The Spearman’s rank correlation coefficient was used for the verification.

When analysing the global index of SF-36 in the group of healthy individuals, the emotional-rational motivation scale was the only one to show a statistically significant relation ($p < 0.05$). Other correlation coefficients were statistically insignificant. Parameters in all Emotional Control Questionnaire scales were statistically significant in patients with cardiovascular diseases. Other SF-36 scales demonstrated significant, but not so unequivocal relations.

Table I. Mean values of the Life Quality Test SF-36 in the examined group

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>total</td>
</tr>
<tr>
<td>Study group, mean ± SD</td>
<td>95.82 ± 15.27</td>
</tr>
<tr>
<td>Control group, mean ± SD</td>
<td>113.05 ± 14.52</td>
</tr>
<tr>
<td>t test (df 158)</td>
<td>6.253***</td>
</tr>
</tbody>
</table>

$^* p < 0.05$, $^{***} p < 0.001$
**Table II.** Mean values of Emotional Control Questionnaire in the examined group

<table>
<thead>
<tr>
<th>Patients with diagnosis</th>
<th>Emotional Control Questionnaire (KKE) scales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ke</td>
</tr>
<tr>
<td>Study group, mean ± SD</td>
<td>3.68 ± 1.89</td>
</tr>
<tr>
<td>Control group, mean ± SD</td>
<td>5.85 ± 1.64</td>
</tr>
<tr>
<td>t test (df 158)</td>
<td>6.473***</td>
</tr>
</tbody>
</table>

*Abbreviations: Ke – emotional expression control, Mer – emotional-rational motivation, Oe – emotional resistance, Ks – situation control, Pe – emotional excitability
* p < 0.05, ** p < 0.01, *** p < 0.001

**Table III.** Correlations between emotional functioning and level of quality of life in the examined group

<table>
<thead>
<tr>
<th>SF-36 scales</th>
<th>Analysed groups</th>
<th>Emotional Control Questionnaire (KKE) scales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ke</td>
<td>Mer</td>
</tr>
<tr>
<td>General result</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG</td>
<td>0.31**</td>
<td>0.20*</td>
</tr>
<tr>
<td>CG</td>
<td>−0.10</td>
<td>0.38*</td>
</tr>
<tr>
<td>Health assessment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG</td>
<td>0.20*</td>
<td>0.11</td>
</tr>
<tr>
<td>CG</td>
<td>−0.22</td>
<td>−0.14</td>
</tr>
<tr>
<td>Physical fitness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG</td>
<td>0.15</td>
<td>0.08</td>
</tr>
<tr>
<td>CG</td>
<td>0.34*</td>
<td>0.21</td>
</tr>
<tr>
<td>Health assessment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG</td>
<td>−0.09</td>
<td>0.01</td>
</tr>
<tr>
<td>CG</td>
<td>−0.17</td>
<td>−0.34*</td>
</tr>
<tr>
<td>Social activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG</td>
<td>0.15</td>
<td>0.11</td>
</tr>
<tr>
<td>CG</td>
<td>−0.20</td>
<td>0.23</td>
</tr>
</tbody>
</table>

*Abbreviations: Ke – emotional expression control, Mer – emotional-rational motivation, Oe – emotional resistance, Ks – situation control, Pe – emotional excitability, SG – study group, CG – control group
* p < 0.05, ** p < 0.01, *** p < 0.001

**Discussion**

Quality of life assessment may significantly improve the psycho-social characteristics of patients [27]. Emotional functioning is in turn a perfect variable explaining the intercourse between risk factors influencing psychosomatic illness and supplements the QoL examination [28].

In relation to the studied population it should be noted that patients with diagnosed cardiovascular disease were characterised by a generally lower level of QoL in comparison to healthy individuals (Figure 1 and Table I). There was also a significant relationship between level of QoL and emotional functioning of patients (Table III). In the light of current knowledge the first of the conclusions presented above does not seem surprising. Studies on QoL of patients suffering from various somatic and mental disorders have been conducted for many years [4, 9, 29, 30]. The presented associations were observed even in a group of chronically ill children [31]. However, there is an interesting relation between the style of emotional functioning of patients and the subjective evaluation of their QoL, especially when we consider the influence of emotional factors on the development of cardiovascular diseases.

Patients with cardiovascular diseases (Tables II and III) may be described as individuals whose control of emotional expression and emotional resistance increases with higher level of QoL. The lower the level of QoL, the higher the need for situation control and emotional excitability. In other words patients with diagnosed IHD and HT were characterised by higher emotional excitability in comparison to healthy individuals. They also undertake efforts to take control over the situation and present with a lower control of emotional expression and a lower emotional resistance in challenging situations.

The presented results are concordant with the results of studies conducted by other authors [32, 33]. Traditional psychological factors in the origin of cardiovascular diseases include the personality type (typical in this case are type A behaviour (TAB) and stress personality type D) and a tendency to experience such negative states as hostility, helplessness, aggression and depression. Among functioning traits characteristic for individuals with TAB are: excessive tendency to experience hostility and aggression, the need for control, a tendency to compete, excessive ambitions, and rapidness of action. Studies on another type of personality, type D, were started recently.
(in 1995). Individuals of this personality have a tendency to experience negative emotions (negative affectivity) as well as a tendency toward denial and inhibition of their expression in social situations (social inhibition), which is caused by a fear of disapproval and rejection by others. They have difficulty in recognising their feelings and revealing them, and deny experienced fears, which may lead to an inability to perceive ongoing stress. Negative emotions often experienced by those individuals include: dysphoria, persistent worry and irritation [34, 35].

Studies demonstrate that individuals with TAB are four times more prone to heart diseases than individuals without those traits. Men with TAB experience MI three times more often. Additionally, TAB is related to increased cholesterol and triglyceride levels, HT and excessive insulin secretion after ingestion of carbohydrates [33].

Patients with type D personality have a 4-5 times higher risk of experiencing MI and higher mortality after MI. They are also more prone to IHD and its progression [16, 17, 36]. Stress-associated personality traits also have an impact on rehabilitation of cardiological patients (there was less evident improvement in this group in comparison to patients with other types of personality) [16]. Type D personality is also related to the presence of biological risk factors of cardiovascular diseases (patients in this group had higher systolic blood pressure, total cholesterol level and body mass [34, 37]).

Individuals demonstrating high levels of anger and hostility have a 50-75% higher risk of developing IHD in comparison to those with low intensity of these emotions [38, 39]. Those patients have a 4 times higher risk of death as a consequence of IHD progression [40]. Smith et al. [41] found a positive correlation between the level of hostility and progression of atherosclerotic changes in carotid arteries. Anger suppression may promote HT, while its external expression is believed to be more related to the risk of IHD [35].

Our group of patients presented a higher intensity of emotional functioning traits typical for described types of personality in comparison to healthy individuals. Similar relations were described by Oginska-Bulik and Juczyński [42]. Subjectively assessed QoL negatively correlates with emotional variables (Table IV). It can be stated that positive self-assessment of QoL performed after the diagnosis and initiation of treatment has a significant influence on the emotional functioning of patients.

As a consequence this relation may retrogradely influence health status of patients as well as the course and efficacy of treatment [11, 36].

Conclusions
1. Level of QoL in patients suffering from HT complicated by IHD is significantly lower than in the control group of healthy individuals.
2. In the analysed groups, level of QoL is closely related to emotional functioning of the studied individuals.
3. In the group of patients with hypertension complicated by IHD, lower level of QoL is accompanied by higher intensity of negative emotional functioning.

References
Jakość życia a funkcjonowanie emocjonalne w chorobach układu krążenia

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Streszczenie

**Wstęp:** Każda choroba i sposób jej leczenia oddziałują na pacjenta nie tylko w wymiarze fizycznym, ale także psychicznym i społecznym. Liczne schorzenia, przede wszystkim ze strony układu sercowo-naczyniowego, są od dawna traktowane jako tzw. współczesne choroby cywilizacyjne. W ich powstawaniu i przebiegu czynniki psychologiczne odgrywają ważną rolę. Do zmiennych tych można zaliczyć m.in. wzorce funkcjonowania emocjonalnego oraz subiektywnie ocenianą jakość życia. Wśród emocji towarzyszących chorobie dominuje często lęk. Jego charakter może być różnorodny, np. lęk przed cierpieniem, lęk przed pogorszeniem relacji z najbliższymi, lęk przed śmiercią. Słabość do określonych reakcji emocjonalnych może być ujmowana jako trwała dyspozycja osobowościowa, która ma wpływ na postrzeganie swojego stanu zdrowia. Jakość życia jest koncepcją globalną, do której należy włączyć działania psychiczne, socjalne, czynności fizyczne i korzystne aspekty dobrego samopoczucia, jak również czynniki negatywne spowodowane chorobą czy niedołęstwem.

**Cel:** Poznanie poziomu jakości życia w wymiarze ogólnym oraz w różnych jego dziedzinach oraz stylów funkcjonowania emocjonalnego w dwóch grupach pacjentów z rozpoznaniem nadciśnienia tętniczego powikłanego chorobą niedokrwienną serca.

**Metody:** W badaniach uczestniczyło 160 mężczyzn, których podzielono na dwie grupy: nadciśnienie tętnicze powikłane chorobą niedokrwienną serca (120 osób) i grupa kontrolna (40 osób). Średnia wieku wynosiła 53,42 roku (SD = 11,95). Przeciętny okres trwania choroby wynosił 4,56 roku. Wśród badanych osób nie stwierdzono innych chorób przewlekłych oraz uzależnień. Z badania wykluczono pacjentów z przebytym zawałem serca lub udarem mózgu w wywiadzie. W badaniach wykorzystano następujące metody psychologiczne: ankietę personalną (posłużyła zebraniu danych demograficznych oraz informacji dotyczących przebiegu choroby), test SF-36, ,,Kwestionariusz Kontroli Emocjonalnej" J. Brzezińskiego (KKE). Test SF-36 pozwala na ocenę jakości życia badanych w zakresie: ogólnego zdrowia, sprawności fizycznej, zmiany stanu zdrowia, zmiany stanu zdrowia w ostatnim roku oraz aktywności społecznej. „Kwestionariusz Kontroli Emocjonalnej” pozwala na charakterystykę funkcjonowania emocjonalnego w 5 kategoriach: kontroli ekspresji emocji, motywacji emocjonalno-racjonalnej, odporności emocjonalnej, kontroli sytuacji, pobudliwości emocjonalnej.

** Wyniki:** Około 25% osób w badanej populacji charakteryzuje się niskim poziomem jakości życia w wymiarze globalnym (SF-36-G). Różnice pod tym względem między osobami chorymi i zdrowymi są istotne statystycznie (t = 2,346, p < 0,05). Podobne zależności dotyczą wysokich wyników badanej skali (t = 2,013, p < 0,05). Zdrowy status jakości życia w wymiarze globalnym, jak i w pozostałych wymiarach w sposób statystycznie istotny różni się osoby zdrowe od pacjentów z chorobami układu krążenia (p < 0,05 i p < 0,001). Badane grupy różnią się także pod względem wszystkich skal „Kwestionariusza Kontroli Emocjonalnej” (p < 0,05, p < 0,01 i p < 0,001). Stwierdzono istotne statystyczne zależności pomiędzy poziomem jakości życia mierzonym kolejnymi skalami ankiety SF-36 a stylem funkcjonowania emocjonalnego (p < 0,05, p < 0,01 i p < 0,001).

**Wnioski:** 1. Poziom jakości życia osób cierpiących na chorobę niedokrwienną serca i nadciśnienie tętnicze jest istotnie niższy w porównaniu z grupą kontrolną osób zdrowych. 2. W analizowanych grupach stwierdzono istotną zależność między poziomem jakości życia a funkcjonowaniem emocjonalnym badanych osób. 3. Niska jakość życia współwystępuje z większym nasileniem negatywnych wzorców funkcjonowania emocjonalnego w grupie pacjentów z rozpoznaną chorobą niedokrwienną serca i nadciśnieniem tętniczym.

Słowa kluczowe: jakość życia, emocje, nadciśnienie tętnicze, choroba niedokrwienna serca

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