

# Emotion regulation and the quality of life in patients with essential hypertension: a search for psychological targets

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## Abstract

**Background:** Essential hypertension (HTN) is a chronic disease, which is associated with a reduction in the health-related quality of life (HRQoL). Most studies have examined the relationship between HRQoL and medical or sociodemographic features, whereas the implementation of tasks related to increasing the HRQoL is not possible without taking psychological factors into account. Studies highlight the importance of emotion regulation in the course and treatment of HTN as well as in the development of psychological interventions for hypertensive patients. The purpose of the study is to investigate the relationship between cognitive emotion regulation strategies and the HRQoL in hypertensive patients.

**Material and methods:** 30 patients with HTN (21 women and 9 men) aged 44–85 ( $M = 64.6$ ,  $SD = 10.0$ ) were recruited in Bydgoszcz (Poland). The patients filled out the Cognitive Emotion Regulation Questionnaire and the World Health Organization Quality of Life–BREF questionnaire.

**Results:** All maladaptive cognitive coping strategies (e.g., catastrophizing, blaming others or rumination) were not related to HRQoL, whereas most adaptive cognitive coping strategies (positive reappraisal, refocus on planning or putting into perspective) were positively correlated with the HRQoL. In particular, positive reappraisal strategy has a highly significant role for the HRQoL in hypertensive patients.

**Conclusions:** The role of adaptive cognitive coping strategies is significant in terms of implementing appropriate psychological support, including the improvement of the HRQoL for patients with HTN. Practical applications of the study are being discussed.

**Key words:** arterial hypertension; cognitive coping strategies; emotion regulation; psychological support; quality of life

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## Introduction

Essential hypertension (HTN) is a psychosomatic and polyetiological disease [1]. Being a chronic illness, HTN is associated with a reduction in the health-related quality of life (HRQoL) [2]. Until now, individual factors influencing

the HRQoL have been explored to a varying degree. Most studies examined the relationship between HRQoL and medical or sociodemographic features. However, the implementation of tasks related to increasing the HRQoL is not possible without taking into account these features in connection with psychological factors.

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Polish researchers distinguished neuroticism, type A behaviour pattern, anger, hostility, type D personality, alexithymia, suppressed emotions and depression among the psychological traits which may play a significant role in HTN [1, 3–6]. The analysis of the above-mentioned psychological features indicates their relationship with the emotional sphere of an individual. In turn, the nature of these traits reflects their dysfunctional role in the emotion regulation among people with HTN [3, 4].

Considering the role of emotion regulation, Chinese researchers noted that compared to healthy people, people with HTN used such maladaptive cognitive emotion regulation strategies (or cognitive coping strategies) as rumination, catastrophizing and blaming others most frequently. They also used the positive reappraisal strategy less frequently [7]. Similar results were obtained in a study conducted in Iran [8]. Studies have noted the role of cognitive coping strategies in the course and treatment of HTN. A prospective study showed that a more frequent use of self-blame, rumination, catastrophizing and blaming others was related with increasing depressive symptoms, and the use of acceptance and refocus on planning was associated with reducing depressive symptoms in patients with HTN [9]. A study at a Brussels hospital found that catastrophizing, blaming others and self-blaming were positively associated with apparent treatment-resistant hypertension. Conversely, such adaptive strategy as putting into perspective was positively associated with treatment adherence [10].

In Polish scientific literature, the importance of the psychological aspects of HTN is underestimated, which makes it difficult to provide psychological support and health promotion programs for hypertensive patients [11]. For example, the Polish Society of Hypertension in 2019 Guidelines for the Management of Hypertension did not stress the role of psychological methods in treatment of HTN [12], which in turn limits the assessment and improvement of the HRQoL in hypertensive people [11].

To the best of the authors' knowledge, no studies are published on the relationship between cognitive emotion regulation and HRQoL in hypertensive patients. Li et al. reported that maladaptive cognitive coping strategies were negatively related to HRQoL, whereas adaptive strategies were positively correlated with HRQoL in breast cancer patients [13]. It is assumed that similar correlations could be found in the sample of hypertensive patients.

The aim of this exploratory study is to investigate the relationship between cognitive coping strategies and HRQoL in hypertensive patients.

## Material and methods

A total of 30 patients with HTN (21 women and 9 men) aged 44–85 ( $M = 64.6$ ,  $SD = 10.0$ ) were recruited in Jan Biziel University Hospital No. 2 and Bolesław Chrobry Outpatient Clinic in Bydgoszcz from 2019 to 2021. The diagnosis of HTN was checked in medical cards. Patients with mental disorders were excluded. Large cities (above 100 thousand inhabitants) were home to 60% of the respondents, medium-sized towns (from 10 to 100 thousand) to 3.3%, small towns (up to 10 thousand) to 10%, villages to 26.7%. People with higher education made up 13.3% of respondents, whereas 86.7% had lower educational levels. 83.3% of the patients were married or living common-law, whereas 16.7% were single. 23.3% of the respondents were employed, whereas 76.7% were retired.

The study was conducted in accordance with the Declaration of Helsinki Ethical Principles. The Bioethics Committee of the Nicolaus Copernicus University functioning at Collegium Medicum in Bydgoszcz approved the study. All patients provided their written informed consent before they answered the questions. There was no reimbursement for the participants.

For assessing the cognitive coping strategies which people use when experiencing negative or unpleasant events the Cognitive Emotion Regulation Questionnaire (CERQ) by Garnefski et al. [14] in the Polish adaptation [15] was used. There are 9 cognitive coping strategies, 5 of which are adaptive (acceptance, refocusing on planning, positive refocusing, positive reappraisal and putting into perspective), whereas 4 are maladaptive ones (self-blame, blaming others, rumination and catastrophizing). The CERQ consists of 36 items and 9 subscales, each containing 4 items. Higher scores indicate a more frequent use of coping strategies [14, 15].

HRQoL was assessed by the World Health Organization Quality of Life–BREF (WHOQoL–BREF) developed by the WHOQOL Group [16] in the Polish adaptation [17]. The WHOQoL–BREF is a 26-item self-report questionnaire for measuring HRQoL in 4 domains: Physical health (7 items; e.g., *Do you have enough energy for everyday life?*), Psychological (6 items; e.g., *How well are you able to concentrate?*), Social Relationships (3 items; e.g., *How satisfied are you with your personal relationships?*) and Environment (8 items; e.g., *To what extent do you have the opportunity for leisure activities?*). The WHOQoL–BREF has two additional questions, which are analysed separately. The first question is about individual's overall perception of HRQoL

and the second question is about an individual's overall perception of health. Higher scores indicate a higher level of HRQoL in all domains.

### Statistical analysis

Descriptive statistics and Cronbach's alpha ( $\alpha$ ) reliability coefficients were calculated for all the analysed variables (cognitive coping strategies and HRQoL domains). The Pearson correlations between the variables were calculated. Due to the numerical predominance of women over men, the non-parametric Mann–Whitney U-test was used to compare the usage of cognitive strategies and the level of HRQoL between gender groups. Multiple regression analysis was used for assessing significant predictors of HRQoL. For conducting a valid multiple regression analysis, it is needed to have a minimum of 5 observations for each variable, including the predicted variable [18]. In this regard, given the sample size equal to 30 patients, maximum 5 predictors can be used. Thus, only the cognitive coping strategies (predictors), which had a significant correlation with HRQoL domains (dependent or predicted variables), were included in the multiple regression analysis.

## Results

Cognitive coping strategies, HRQoL domains and age were reasonably normally distributed (maximum skewness =  $-1.22$ , maximum kurtosis =  $1.58$ ). The Pearson correlation coefficients were calculated for assessing relationships between these variables (see Tab. 1). Age was not significantly correlated with HRQoL domains or cognitive coping strategies (except negative correlation with self-blame;  $r = -0.42$ ,  $p = 0.022$ ).

The Mann-Whitney U-test revealed no gender differences in cognitive coping strategies and HRQoL ( $p > 0.05$ ).

There were no correlations between coping strategies and physical health, whereas 3 adaptive coping strategies (positive reappraisal, putting into perspective and refocus on planning) were positively related to Psychological domain of HRQoL. Two of them (positive reappraisal and putting into perspective) were also positively associated with Social Relationships and Environment domains of HRQoL (see Tab. 1).

Multiple regression analysis (stepwise regression method) was performed to define which cop-

**Table 1.** Descriptive statistics, Pearson correlation coefficients and multiple regression analysis of coping strategies effects on quality of life in hypertensive patients ( $n = 30$ )

Variables	$\alpha$	M (SD)	Correlation coefficients				Dependent variables		
							Psychological domain	Social relationships	Environment
			Physical health	Psychological domain	Social relationships	Environment	Beta		
Physical health	0.89	13.85 (2.74)	–	0.52**	0.29	0.42	–	–	–
Psychological domain	0.72	14.49 (1.87)	0.52**	–	0.64***	0.49**	–	–	–
Social relationships	0.55	15.11 (2.33)	0.29	0.64***	–	0.63***	–	–	–
Environment	0.60	14.02 (1.70)	0.42*	0.49**	0.63***	–	–	–	–
Self-blame	0.66	10.67 (2.93)	0.06	0.12	$-0.04$	$-0.30$	–	–	–
Acceptance	0.65	13.97 (2.66)	$-0.28$	0.32	0.22	0.08	–	–	–
Rumination	0.83	11.97 (3.46)	$-0.11$	0.18	0.11	$-0.12$	–	–	–
Positive refocusing	0.76	13.73 (3.60)	$-0.06$	0.33	0.23	0.32	–	–	–
Refocus on planning	0.78	14.80 (3.31)	0.15	0.41*	0.25	0.20	NS	–	–
Positive reappraisal	0.83	14.67 (3.46)	0.29	0.74***	0.60***	0.41*	0.74***	0.60***	0.41*
Putting into perspective	0.76	14.93 (3.20)	0.14	0.54**	0.51**	0.41*	NS	NS	NS
Catastrophizing	0.78	10.60 (3.85)	0.02	0.25	0.24	$-0.01$	–	–	–
Blaming others	0.71	9.43 (3.10)	$-0.21$	0.08	0.02	$-0.12$	–	–	–

Significant correlations are in bold; NS — non-significant predictor; SD — standard deviation; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

ing strategies were significant predictors of HRQoL. Only those strategies which had a significant correlation with certain HRQoL domain were included in the analysis. Finally, only positive reappraisal was a significant predictor of Psychological [F(1;28) = 34.88;  $p < 0.001$ ; adjusted  $R^2 = 0.539$ ], Social relationships [F(1;28) = 15.82;  $p < 0.001$ ; adjusted  $R^2 = 0.338$ ] and Environment [F(1;28) = 5.72;  $p = 0.024$ ; adjusted  $R^2 = 0.140$ ] domains of HRQoL (see Tab. 1).

## Discussion

The study aims to explore a relationship between cognitive coping strategies and HRQoL in hypertensive people. Only three adaptive cognitive coping strategies were related to HRQoL domains (except Physical health) in people with HTN. Comparing the effects of these strategies on HRQoL, only positive reappraisal strategy explained from 14% to 54% of the variance of HRQoL domains, which indicates a highly significant role of this strategy for the quality of life in hypertensive patients. Positive reappraisal refers to “thinking of attaching a positive meaning to the event in terms of personal growth” (e.g., items of this CERQ subscale: *I think I can learn something from the situation, I think that I can become a stronger person as a result of what has happened or I look for the positive sides to the matter* [19]). Thus, hypertensive patients who frequently use this strategy for stressful situations can assess their Social relationships, Environment and Psychological domain of HRQoL more positively.

Positive reappraisal as well as other strategies were not significantly associated with Physical health in our relatively small sample. Therefore, Physical health domain, which is related to daily life activities, dependence on medicinal substances and medical aids, energy and fatigue, mobility, pain and discomfort, sleep and rest, work capacity, was not associated with cognitive strategies in stressful situations. We assume that there was no significant correlation between cognitive coping strategies and HRQoL, because physical health is more associated with objective health parameters than with subjective experiences which are more characteristic of Psychological domain (e.g., body image and appearance, negative feelings), Social relationships (e.g., personal relationships, social support) and Environment (e.g., financial resources, freedom, physical safety and security) domains. Another explanation of this result can lie in patients' beliefs or in a more rigid attitude to their somatic health, for example, because of frequent and pro-

longed bothersome somatic symptoms related to HTN [20]. Patients may pay more attention to their physical health and view it in a negative way due to a complication of HTN or a deterioration of any physical health parameters over time. This, in turn, makes it difficult for them to make a more positive assessment of their physical health.

The results of this pilot study showed that cognitive coping strategies assessment may be a promising approach for psychological support, including the improvement of the HRQoL in hypertensive patients [3, 4]. The studies showed that adaptive and maladaptive cognitive coping strategies were mediators of the relationship between mindfulness and perceived stress in the sample of hypertensive patients [21]; moreover, there is a possibility of developing adaptive cognitive emotion regulation using psychotherapeutic techniques [22]. Consequently, the role of cognitive coping strategies is significant in terms of implementing appropriate psychological support for patients with HTN.

The main task of evaluating cognitive coping strategies is the development of psychological programs and training patients to use adaptive coping strategies. In clinical settings, the use of the CERQ is very simple. Therefore, we assume that the cognitive coping strategies assessment and their correction in patients with HTN is a promising person-centered approach in clinical practice. Despite the fact that we investigated the relationship of cognitive coping strategies with the HRQoL among hypertensive patients, the results of this study can be viewed from the perspective of communication between a doctor and a patient. When communicating with patients with HTN, clinicians sometimes provide them with unpleasant medical information. To reduce the effect of negative information on the patient, clinicians can use phrases which add a positive meaning to this information or in general to the treatment and prevention of hypertension (*Taking medications serves your life, even if they may have side effects. By taking medication, you will live longer, which will allow you to develop in future and help your loved ones. It is important to do what serves life, so adherence to treatment is very important*). Considering the doctor's importance for the patient, such supportive behaviour by the doctor may enable patients to view negative information in a more positive way. Perhaps such clinicians' behaviour will probably serve as a training to use adaptive cognitive strategies, which are related to HRQoL in hypertensive patients.

Limitations of the study should be noted. The sample size and the representativeness were relatively small; thus, the obtained results should not be

generalized. We used self-reported questionnaires, so the reliability was low for some WHOQoL-BREF scales ( $\alpha \leq 0.60$  for Social relationships and Environment domains of HRQoL). This is a cross-sectional study; therefore, no conclusions can be drawn regarding the temporal order of the cognitive coping strategies and HRQoL in hypertensive people. Despite the limitations, the obtained results are significant, because the correlations between the studied variables were high in this relatively small sample. It seems important to conduct a study in a more representative group, taking into account the role of socio-demographic and medical factors of HTN.

## Conclusion

The role of adaptive cognitive coping strategies is significant in terms of the HRQoL improvement for patients with HTN. Considering the role of cognitive coping strategies in the course and treatment of HTN, the assessment of using these strategies is an important area for implementing psychological support programs for hypertensive patients.

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