



## ARTERIAL HYPERTENSION INFLUENCES THE HEALTH-RELATED QUALITY OF LIFE OF 65+ YEAR-OLD PATIENTS

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### ABSTRACT

**This study aims** to compare two health-related quality of life (HRQoL) measures of patients who reported having arterial hypertension (AH) and those who did not report this condition.

**Materials and methods:** A population-based observational survey was performed in Sofia in 2017 through face-to-face interviews among 246 persons aged 65 and above. Two HRQoL instruments (SF-12 and WHO-5) and visual analogue scale (VAS) for self-perceived health were used.

**Results:** The prevalence of AH was 67.1%. AH and non-AH patients were similar in age, gender, education, and marital status. VAS medians were significantly lower among AH patients (60 vs. 70,  $p = 0.012$ ) as well as their SF-6D scores (78 vs. 82,  $p = 0.009$ ). AH patients more often reported being limited in moderate activities (21.8% limited a lot vs. 7.4%,  $p = 0.018$ ) as well as in climbing several flights of stairs (20.6% limited a lot vs. 11.1%,  $p = 0.001$ ). They were also more affected by the pain ( $p = 0.026$ ). This resulted in significantly lower scores in two SF-12 domains: Physical Functioning ( $p = 0.014$ ) and Bodily Pain ( $p = 0.010$ ). AH patients reported feeling active and vigorous less often (all the time 25.5% vs. 40.7%,  $p = 0.045$ ). However, the total WHO-5 score did not differ significantly between groups ( $p > 0.05$ ).

**Conclusion:** In general, AH patients showed lower HRQoL compared to normotensive patients.

**Keywords:** health-related quality of life, arterial hypertension, SF-12, WHO-5, VAS, ageing,

### INTRODUCTION

Patient-reported outcomes (PRO) are widely used nowadays. The number of measuring instruments is constantly increasing [1]. PROs are useful because they provide valuable information directly from the source, the patient, easily, and for a relatively low cost [2].

Health-related quality of life (HRQoL) is one of the patient-reported outcomes. HRQoL can be measured in the general population and among patients with various diseases, including arterial hypertension (AH), using generic and disease-specific instruments. Disease-specific HRQoL measures provide helpful information because they are specially designed for patients with a given disease. However, they do not allow patients to be compared with those suffering from other diseases or the general population. Therefore, generic HRQoL instruments are more applicable in these cases [3].

A wide spectrum of generic HRQoL measures is used among patients with arterial hypertension [4, 5]. Some of the most commonly applied instruments are EQ-5D and SF-36 (and its derivative SF-12), WHO-QoL-Bref, Nottingham Health Profile, etc.

It is accepted that chronic diseases negatively affect patients' health-related quality of life [6]. The studies for arterial hypertension patients reported controversial results. An article published in 2012 suggested that antihypertensive treatment itself lowers HRQoL among patients [7]. Another study reported that the treatment was related to an increase in patients who reported subjective symptoms among those on therapy despite their better well-being [8]. A recently published review suggests that intensive AH treatment, especially among elderly patients, could increase the risk of complications and worsening in HRQoL [9]. Other studies found that hypertension awareness leads to lower HRQoL and a higher rate

of depression [10, 11].

In addition, only a few of the recently published researches studies compared HRQoL between AH patients and normotensive ones, and none of them drew a comparison among older adults [11, 12].

This study aims to compare two HRQoL measures between the patients who reported having arterial hypertension (for this study, they are called hypertensive) and those who did not report this condition (for this study, they are called normotensive). Additionally, we wanted to assess the correlation between HRQoL instruments and age among AH patients.

## MATERIALS AND METHODS

### Study population

A population-based observational survey was performed among 246 persons aged 65 and above in Sofia, the capital of Bulgaria, between July and August 2017. Data were collected through face-to-face interviews with an experienced sociologist before outpatient free-of-charge eye examinations performed by a qualified ophthalmologist. The eye examinations were popularised by the mass media. Two questionnaires assessing patients' health-related quality of life were used. The official Bulgarian translation of the second version of Short Form-12 (SF-12v2) was applied, and the results were scored using Sheffield University's scoring software. Eight health domains were derived from the questionnaire and the score of the 6-dimensional preference-based measure Short Form-6 (SF-6D). The second HRQoL questionnaire used in the study was the official Bulgarian version of the World Health Organisation Five Well-being scale (WHO-5). In addition to these instruments, a visual-analogue scale for self-perceived health, ranging from 0% (worst possible health) to 100% (perfect health), was used. Additionally, demographic information was collected (age, gender, educational level, marital status), and self-reported arterial hypertension was recorded. The interviews took approximately 15 minutes.

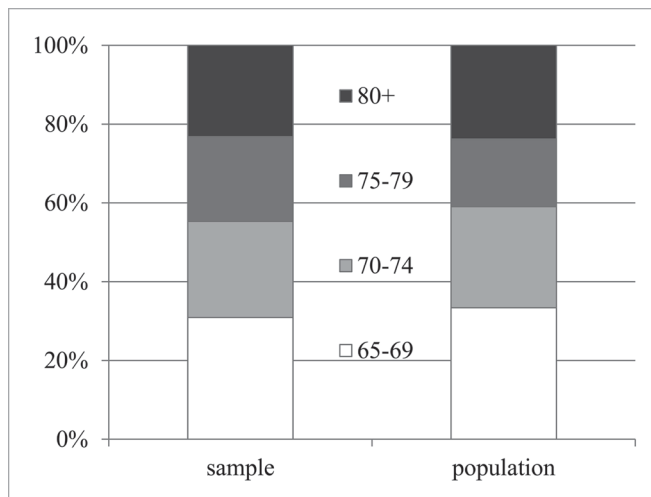
### Ethical considerations

The study was conducted in line with the Declaration of Helsinki. All patients were informed about the aims of the study before the interview was held, and they agreed to participate. No identifiable information was collected (e.g., name, date of birth, or civil unique identifier).

### Sample size

The sample size was based on the population of the Sofia-grad district (the capital Sofia and its close surroundings) in 2017. It was calculated for a proportion 50% with a 6.5% margin of error for a population of 228,605 citizens, 95% confidence, and 80% power. The sample resulted in a total of 228. Interviews were conducted with all patients who came for the eye examinations, so the final sample size was larger than calculated (246 persons). The age distribution in four groups showed a declining number with ageing, similar to the population (Fig. 1).

**Fig. 1.** Age distribution of the sample compared to the population. Both distributions are similar.



### Statistical methods

The results were presented as numbers and percentages for categorical variables, medians and interquartile range (IQR: both 25th and 75th percentile) for numerical variables due to their non-normal distribution. Hypertensive and normotensive groups' study characteristics were compared using the Mann-Whitney U and Pearson chi-squared test (Fisher's Exact test when applicable). Spearman's rho correlation coefficient was used to check the correlation between numerical and ordinal variables. The strength of the relationship was described as weak (Spearman's rho < 0.3), moderate (0.3 < Spearman's rho < 0.5), strong (0.5 < Spearman's rho < 0.7), and very strong (0.7 < Spearman's rho < 0.9). Two-tailed p-values < 0.05 were considered significant. The analysis was performed by IBM SPSS v. 22.

## RESULTS

The overall self-reported hypertension prevalence was 67.1% (n= 165 out of 246). AH was more common among females (69.4% vs. 63.7% among males), but significance was not reached (p>0.05), as shown in Table 1. In addition, hypertensive and normotensive patients had similar median ages: both groups' median age was 73 years (p>0.05). Moreover, marital status and education were similar in both groups (p>0.05), although the proportion of hypertensive persons decreased as education increased. On the other hand, VAS medians assessing study groups' self-perceived health were significantly different: patients with arterial hypertension reported lower levels of self-perceived health (p= 0.012). Furthermore, both groups' average SF-6D scores were significantly different, and hypertensive patients showed lower values (p= 0.009).

**Table 1.** Demographics, VAS, and SF-6D score of normotensive and hypertensive patients, % by rows, are shown below.

		No hypertension, n=81		Self-reported hypertension, n=165		p
		n	%	n	%	
Gender	Male	37	36.3	65	63.7	0.347
	Female	44	30.6	100	69.4	
Marital Status	Not Married	8	50	8	50	0.23
	Married or Cohabiting	43	33.3	86	66.7	
	Divorced or Separated	11	37.9	18	62.1	
	Widowed	18	25.4	53	74.6	
Education	Secondary or lower	4	23.5	13	76.5	0.348
	High School	22	28.2	56	71.8	
	University or College	54	36	96	64	
Age (Me; IQR)		73	68-78	73	69-80	0.311
VAS (Me; IQR)		70	50-80	60	50-70	0.012
SF-6D (Me; IQR)		82	72-92	78	63-86	0.009

The SF-12 Cronbach's Alpha was 0.797. A detailed analysis showed that only three out of twelve SF-12 questions revealed significantly different answers between normotensive and hypertensive patients (Table 2). Those with self-reported hypertension more frequently felt limited by their health in moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf ( $p=0.018$ ). Hypertensive patients were also more restricted by their health when climbing several flights of stairs ( $p=0.001$ ). Individuals with hypertension also reported more pain during the past four weeks, which interfered with their normal

work ( $p=0.026$ ). These three differences led to significantly different scores in two SF-12 domains: Physical Functioning (PF) and Bodily Pain (BP). Hypertensive patients scored lower on both PF ( $p=0.014$ ) and BP ( $p=0.010$ ), indicating worse physical functioning and more frequent bodily pain, thus reflecting a significantly lower HRQoL.

It is worth noting that the fifth question of the instrument was close to significance but did not reach it ( $p=0.097$ ). Hypertensive patients more often reported limitations in their work or other activities due to their physical health over the past four weeks.

**Table 2.** Comparing SF-12 scores between normotensive and hypertensive patients; percentages based on columns are shown below.

		No hypertension		Self-reported hypertension		p
		n	%	n	%	
1. In general, would you say your health is:	Excellent	2	2.5	0	0.0	0.140
	Very good	9	11.1	18	10.9	
	Good	61	75.3	116	70.3	
	Fair	8	9.9	23	13.9	
	Poor	1	1.2	8	4.8	
2. Does your health now limit you in moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf?	Yes, limited a lot	6	7.4	36	21.8	0.018
	Yes, limited a little	29	35.8	51	30.9	
	No, not limited at all	46	56.8	78	47.3	
3. Does your health now limit you in climbing several flights of stairs?	Yes, limited a lot	9	11.1	34	20.6	0.001
	Yes, limited a little	24	29.6	74	44.8	
	No, not limited at all	48	59.3	57	34.5	

4. During the PAST 4 WEEKS, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health:Accomplished less than you would like?	All of the time	1	1,2	7	4,2	0.724
	Most of the time	4	4.9	8	4.8	
	Some of the time	13	16.0	31	18.8	
	A little of the time	5	6.2	11	6.7	
	None of the time	58	71.6	108	65.5	
5. During the PAST 4 WEEKS, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health:Were limited in the kind of work or other activities?	All of the time	0	0.0	11	6.7	0.097
	Most of the time	4	4.9	7	4.2	
	Some of the time	14	17.3	34	20.6	
	A little of the time	3	3.7	11	6.7	
	None of the time	60	74.1	102	61.8	
6. During the PAST 4 WEEKS, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious):Accomplished less than you would like?	All of the time	2	2.5	4	2.4	0.903
	Most of the time	4	4.9	8	4.8	
	Some of the time	11	13.6	29	17.6	
	A little of the time	4	4.9	11	6.7	
	None of the time	60	74.1	113	68.5	
7. During the PAST 4 WEEKS, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious):Didn't do work or other activities as carefully as usual?	All of the time	2	2.5	7	4.2	0.891
	Most of the time	3	3.7	5	3.0	
	Some of the time	10	12.3	26	15.8	
	A little of the time	4	4.9	8	4.8	
	None of the time	62	76.5	119	72.1	
8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?	Not at all	49	60.5	66	40.0	0.026
	A little bit	10	12.3	20	12.1	
	Moderately	16	19.8	51	30.9	
	Quite a bit	4	4.9	17	10.3	
	Extremely	2	2.5	11	6.7	
9. How much of the time during the PAST 4 WEEKS: Have you felt calm and peaceful?	All of the time	27	33.3	48	29.1	0.788
	Most of the time	27	33.3	53	32.1	
	Some of the time	20	24.7	44	26.7	
	A little of the time	3	3.7	5	3.0	
	None of the time	4	4.9	15	9.1	
10. How much of the time during the PAST 4 WEEKS: Did you have a lot of energy?	All of the time	24	29.6	32	19.4	0.516
	Most of the time	18	22.2	41	24.8	
	Some of the time	24	29.6	56	33.9	
	A little of the time	9	11.1	22	13.3	
	None of the time	6	7.4	14	8.5	
11. How much of the time during the PAST 4 WEEKS: Have you felt downhearted and blue?	All of the time	7	8.6	14	8.5	0.458
	Most of the time	4	4.9	13	7.9	
	Some of the time	16	19.8	47	28.5	
	A little of the time	18	22.2	28	17.0	
	None of the time	36	44.4	63	38.2	
12. During the past week, how much of the time has your physical health or emotional problems	All of the time	1	1.2	7	4.2	
	Most of the time	3	3.7	5	3.0	

interfered with your social activities (like visiting with friends, relatives, etc.)?	Some of the time	13	16.0	25	15.2	0.172
	A little of the time	0	0.0	9	5.5	
	None of the time	64	79.0	119	72.1	
Physical Functioning (PF); Me; IQR		75	50-100	75	50-75	0.014
Role-Physical (RP); Me; IQR		100	75-100	100	50-100	0.136
Bodily Pain (BP); Me; IQR		100	50-100	75	50-100	0.010
General Health (GH); Me; IQR		60	60-60	60	60-60	0.337
Vitality (VT); Me; IQR		75	50-100	50	50-75	0.155
Social Functioning (SF); Me; IQR		100	100-100	100	75-100	0.214
Role-Emotional (RE); Me; IQR		100	75-100	100	75-100	0.578
Mental Health (MH); Me; IQR		75	50-100	75	50-88	0.257

WHO-5 Cronbach's Alpha was 0.843. The results show that one out of five WHO-5 questions was significantly different between normotensive and hypertensive patients (Table 3). Those with arterial hypertension reported feeling active and vigorous less often ( $p=0.045$ ). Similarly, the fourth and fifth questions demonstrated dif-

ferences between the study groups, but significance was not reached ( $p>0.05$ ). Arterial hypertension patients felt fresh and rested less often, and things that interested them less often filled their daily lives. Thus, this did not result in a significantly different total score of the entire HRQoL instrument ( $p>0.05$ ).

**Table 3.** Comparing the WHO-5 between normotensive and hypertensive patients, percentages are shown below in columns.

		No hypertension		Self-reported hypertension		p
		n	%	n	%	
1. I have felt cheerful and in good spirits	At no time	6	7.4	11	6.7	0.935
	Some of the time	9	11.1	17	10.3	
	Less than half of the time	9	11.1	26	15.8	
	More than half of the time	22	27.2	38	23.0	
	Most of the time	18	22.2	38	23.0	
	All of the time	17	21.0	35	21.2	
2. I have felt calm and relaxed	At no time	3	3.7	13	7.9	0.316
	Some of the time	9	11.1	9	5.5	
	Less than half of the time	13	16.0	35	21.2	
	More than half of the time	20	24.7	35	21.2	
	Most of the time	20	24.7	33	20.0	
	All of the time	16	19.8	40	24.2	
3. I have felt active and vigorous	At no time	2	2.5	17	10.3	0.045
	Some of the time	4	4.9	12	7.3	
	Less than half of the time	12	14.8	18	10.9	
	More than half of the time	15	18.5	45	27.3	
	Most of the time	15	18.5	31	18.8	
	All of the time	33	40.7	42	25.5	
4. I woke up feeling fresh and rested	At no time	6	7.4	27	16.4	0.073
	Some of the time	12	14.8	14	8.5	
	Less than half of the time	9	11.1	8	4.8	
	More than half of the time	14	17.3	30	18.2	

	Most of the time	9	11.1	29	17.6	
	All of the time	31	38.3	57	34.5	
5. My daily life has been filled with things that interest me	At no time	6	7.4	21	12.7	0.091
	Some of the time	12	14.8	18	10.9	
	Less than half of the time	14	17.3	31	18.8	
	More than half of the time	8	9.9	34	20.6	
	Most of the time	17	21.0	19	11.5	
	All of the time	24	29.6	42	25.5	
WHO-5; Me; IQR		68	52-84	68	48-80	0.274

The relationship between HRQoL measures was assessed only among the patients who reported AH (Table 4). Additionally, since the relationship between SF-12 domains is well known, we did not check it.

Age was negatively associated with both measures of self-perceived health. It showed an association with General Health (Spearman's rho=-0.159, p=0.042) as well as with the first question of SF-12 describing self-perceived health from which the domain is calculated (Spearman's rho=0.231, p=0.003). Both relationships could be described as weak due to low values of the correlation coefficient (<0.3). Age was also negatively related to SF-6D (Spearman's rho=-0.229, p=0.003). Close to the significance level without reaching it were the associations of age with VAS (p=0.054), Vitality (p=0.054), Mental Health (p=0.055), and Physical Functioning (p=0.091).

Moreover, VAS was related to WHO-5 as well as the first SF-12 question (SF-12q1) and almost all SF-12 domains except for the Bodily Pain. BP association with VAS was close to significance but did not reach it (p=0.056). The strongest relationships of VAS were observed to SF-12q1 (Spearman's rho=0.400, p<0.001), WHO-5 (Spearman's rho=0.383, p<0.001), Vitality (Spearman's rho=0.354, p<0.001), and General Health (Spearman's rho=0.352, p<0.001). VAS showed a relationship with SF-6D as well (Spearman's rho=0.329, p<0.001). The strength of these associations could be described as moderate

(Spearman's rho between 0.3 and 0.5). The other associations of VAS: with Physical Functioning, Role-Physical, Social Functioning, Role-Emotional, and Mental Health were weak but significant (Spearman's rho<0.3, p<0.05).

In contrast, SF-12q1 showed to be significantly associated with all SF-12 domains as well as with WHO-5 and SF-6D. A very strong relationship was observed with General Health (Spearman's rho=0.825, p<0.001), but this domain calculation was based on SF-12q1. Moreover, SF-12q1 was nearly strongly connected to SF-6D (Spearman's rho=-0.496, p<0.001). A moderate association was noticed with WHO-5 (Spearman's rho=0.364, p<0.001). The other relationships of SF-12q1 were weak but significant (Spearman's rho<0.3, p<0.05).

Furthermore, WHO-5 was associated with VAS and SF-12q1 (mentioned above). WHO-5 showed a strong connection to SF-6D (Spearman's rho=0.581, p<0.001) as well as to Mental Health (Spearman's rho=0.503, p<0.001). Moderate relationships were observed with Vitality (Spearman's rho=0.454, p<0.001), Role-Emotional (Spearman's rho=0.383, p<0.001), and Social Functioning (Spearman's rho=0.337, p<0.001). WHO-5 showed a weak connection to Role-Physical and General Health (Spearman's rho<0.3, p<0.05). The association with Physical Functioning was close to significance but did not reach it (p=0.053), as well as the one with Bodily Pain (p=0.094). No relationship was proven between WHO-5 and age (p>0.05).

**Table 4.** Correlation between age, VAS, WHO-5, SF-12 question 1, and SF-12 domains.

		Age	VAS	SF-12 q1	WHO-5
VAS	Spearman's rho	-0.151			
	p	0.054			
SF-12 q1	Spearman's rho	0.231	-0.400		
	p	0.003	<0.001		
WHO-5	Spearman's rho	-0.084	0.383	-0.364	
	p	0.281	<0.001	<0.001	
PF	Spearman's rho	-0.146	0.198	-0.201	0.151
	p	0.062	0.011	0.010	0.053
RP	Spearman's rho	-0.101	0.181	-0.245	0.284
	p	0.198	0.020	0.001	<0.001

BP	Spearman's rho	-0.012	0.149	-0.194	0.131
	p	0.883	0.056	0.013	0.094
GH	Spearman's rho	-0.159	0.352	-0.825	0.280
	p	0.042	<0.001	<0.001	<0.001
VT	Spearman's rho	-0.150	0.354	-0.298	0.454
	p	0.054	<0.001	<0.001	<0.001
SF	Spearman's rho	-0.132	0.203	-0.212	0.337
	p	0.091	0.009	0.006	<0.001
RE	Spearman's rho	-0.057	0.214	-0.261	0.383
	p	0.464	0.006	0.001	<0.001
MH	Spearman's rho	-0.149	0.213	-0.291	0.503
	p	0.056	0.006	<0.001	<0.001
SF-6D	Spearman's rho	-0.229	0.329	-0.496	0.581
	p	0.003	<0.001	<0.001	<0.001

Notes: Visual-Analogue Scale (VAS); In general, would you say your health is: Excellent, Very good, Good, Fair, Poor (SF-12q1); Physical Functioning (PF); Role-Physical (RP); Bodily Pain (BP); General Health (GH); Vitality (VT); Social Functioning (SF); Role-Emotional (RE); Mental Health (MH)

## DISCUSSION

We aimed to compare HRQoL between hypertensive and normotensive patients aged 65 and above. Both HRQoL instruments applied in the study showed good internal consistency.

We found 67.1% self-reported hypertension prevalence. This corresponds to the one measured by the European Health Interview Survey for the entire country for the same age group, 65+ years old: 68.2% in 2014 and 69.5% in 2019 [13]. In addition, it is known that AH is age-related; its prevalence is rising with age [14]. This could explain the relatively high AH prevalence recorded in our study.

Arterial hypertension was more prevalent among women in our survey, but significance was not reached. EHIS also reported similar trends for Bulgaria as well as for the entire European Union (27 countries), except Luxembourg and the Czech Republic, where males' prevalence was higher, along with Cyprus, where both genders' AH spread was equal in 2019 [13].

Despite other research findings [15], we did not manage to prove differences on the SF-12 emotional scale between hypertensive and non-hypertensive patients. A potential explanation may lie in the use of different HRQoL assessment instruments, as well as differences in the demographic profiles of the studied populations.

Although there is a measurement error due to rounding in VAS [16], it is more sensitive than the first SF-12 question (SF-12q1), which also measures self-rated health. This is mainly because VAS is much more detailed (ranging from 0 to 100), while SF-12q1 has only 5 levels. That is the reason we found a significant difference between the study groups in their average VAS, but not in the question describing it in 5 categories. In contrast, SF-12q1 was associated with all SF-12 domains, while VAS in connection

to Bodily Pain was at borderline significance. Both VAS and SF-12q1 showed similarities in their strong relationships with WHO-5. Daniilidou et al. also compared these two measures [17]. They found that the relationship between them was stronger, and they also proved both measures' connection to age. Nevertheless, their research surveyed the general population regardless of chronic conditions. In addition, Daniilidou et al. concluded that questions that do not have specified response options (like VAS) are less suitable for older persons. This means that despite VAS being more detailed, SF-12q1 is more applicable in describing HRQoL, especially among the elderly, but VAS is still more sensitive to capture differences between hypertensive and normotensive patients.

We measured self-reported hypertension, which carries a risk of underestimation of the real arterial hypertension prevalence due to different underreporting reasons [18]. However, a skilled sociologist interviewed our patients, so we believe that risk was minimized.

Xu et al. found significantly lower scores on Physical Functioning, Role-Physical, Bodily Pain, General Health, Vitality, and Social Function in hypertensive compared to normotensive patients [12]. Thus, their study population was much younger (45-53 years old), and that is probably why we confirmed differences in Physical Functioning and Bodily Pain only: ageing is characterized by a decrease in HRQoL solely due to age [19]. One of the earliest population-based HRQoL surveys conducted in Bulgaria reported an age-associated increase in health problems, particularly among individuals over 50 years of age. [20].

Katsi et al. concluded that age is negatively related to Physical Functioning and Role-Emotional [21]. Our study confirmed this only for Physical Functioning. We found that age was negatively related to General health. In

addition, Vitality and Mental Health were close to a significant connection to age, but did not reach it. These differences could also be explained by age.

Uncontrolled AH leads to serious health deterioration and thus lowers HRQoL [22]. We did not measure the proportion of controlled and uncontrolled AH among our study population. It is known that the proportion of uncontrolled hypertension among those on treatment in Bulgaria is relatively high, 52% [23]. For comparison, the same age poor blood pressure control prevalence is 59% among the Tunisian population [24]. A possible explanation is the low treatment adherence [25]. In addition, Bulgaria has a low awareness rate, about 15% [26]. Self-management educational programs [27], as well as nurse-led programs [28], may contribute to lowering uncontrolled hypertension and thereby improving patients' HRQoL.

#### Strengths and limitations of the study

We interviewed 246 patients, which is enough to detect significant differences between AH and non-AH patients in their HRQoL.

Our study population belongs to one city, which reduces the risk of differences in AH prevalence due to pollution-induced hypertension [29].

WHO-5 is more or less a measure of a well-being index rather than a general health-related quality of life instrument. Nevertheless, it measures depression, which is a part of the whole HRQoL concept. In addition, AH is closely related to anxiety and depression [30, 31]; thus, our data did not prove a significant difference for the entire instrument. On the other hand, Bech et al. compared the WHO-5 and SF-36 Mental Health domain and concluded that the WHO-5 is more sensitive [32], so a simultaneous application of both instruments is worth considering.

## CONCLUSION

In general, hypertensive patients showed lower HRQoL compared to normotensive patients. Older adults' health-related quality of life is relatively deteriorated due to ageing itself, which premises that not all HRQoL domain scores could be proven as significantly different between hypertensive and normotensive persons. AH patients more often were limited in their physical functioning, experienced pain, less often felt active and vigorous, and perceived their health as worse compared to normotensive individuals. Both HRQoL measures showed good internal consistency. The instruments do not overlap, which makes them useful for a simultaneous application in HRQoL assessment, either among the general population or among patients with chronic diseases.

#### Abbreviations

AH: arterial hypertension  
BP: Bodily Pain  
GH: General Health  
HRQoL: health-related quality of life  
IQR: interquartile range  
MH: Mental Health  
PF: Physical Functioning  
PRO: Patient-reported outcomes  
RE: Role-Emotional  
RP: Role-Physical  
SF: Social Functioning  
SF-12q1: The first SF-12 question  
SF-12v2: Short Form-12, second version  
VAS: Visual-analogue scale  
VT: Vitality  
WHO-5: World Health Organization Five Well-being Scale

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