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Treatment of patients with arterial hypertension in family medicine in Slovenia – Assessment of the situation after the introduction of modal practices

Obravnava bolnikov z arterijsko hipertenzijo v ambulantah družinske medicine v Sloveniji – Ocena stanja po uvedbi referenčnih ambulant

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Abstract

Background: Most patients with uncomplicated arterial hypertension are treated by family physicians. The purpose of the research was to discuss how to consider patients with arterial hypertension in Slovenia and to assess blood pressure control.

Methods: In a prospective observational survey, in 21.11.2017 to 28.3. In 2019, six months observation time were reviewed for previously untreated patients with essential arterial hypertension in 158 family medicine clinics in Slovenia. On the end of follow up period, blood pressure (BP) control was evaluated.

Results: A total of 1060 patients were included, with the mean age 58.6 ± 12.1 years old. Among the patients included, 579 (55%) were men and 481 (45%) were women. The mean systolic BP on entry was 165.2 ± 14.5 mm H, diastolic 96.2 ± 10,0 mm Hg. 751 patients (70.8%) had associated cardio-vascular disease factors. 408 (38.5%) patients had assessed cardiovascular risk as high or very high. Antihypertensive medication was initiated in 1046 (98.7%) patients; in 418 patients (39.4%) combinatory antihypertensive therapy with two or more antihypertensive drugs in free or fixed drug combinations was initiated. 331 patients (31.6%) had a visit to a practice nurse.

929 (87.6%) patients completed the study. The mean systolic BP at the conclusion of the study was 135.4 ± 10.9 mm Hg and diastolic 81,8 ± 8,0 mm Hg. 63.3% of patients received target BP.

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Key words: arterial hypertension; family medicine; reference clinics; teamwork; combined therapy

Ključne besede: arterijska hipertenzija; družinska medicina; referenčne ambulante; timsko delo; kombinacijsko zdravljenje

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Conclusion: We recognized some room for improvements. In the future, it will be necessary to strengthen the team management of patients and to encourage doctors to introduce combination therapy, preferably in a fixed dose combination of two or three drugs in one tablet.

Izvleček

Izhodišča: Večino bolnikov z nezapleteno arterijsko hipertenzijo obravnavamo zdravniki družinske medicine. Namen raziskave je bil ugotoviti, kako poteka obravnava bolnikov z arterijsko hipertenzijo v timu družinske medicine v Sloveniji ter oceniti urejenost krvnega tlaka.

Metode: V prospektivni opazovalni raziskavi smo v obdobju od 21. 11. 2017 do 28. 3. 2019 šest mesecev spremljali obravnavo dotlej še nezdravljenih bolnikov z esencialno arterijsko hipertenzijo v 158 ambulantah družinske medicine v Sloveniji. Ob koncu spremljanja smo ocenili urejenost krvnega tlaka (KT).

Rezultati: Vključenih je bilo 1.060 bolnikov, katerih povprečna starost je bila 58,6 ± 12,1 let. Med vključenimi bolniki je bilo 579 (55 %) moških in 481 (45 %) žensk. Povprečna vrednost sistoličnega KT ob vstopu je bila 165,2 ± 14,5 mm Hg, diastoličnega pa 96,2 ± 10,0 mm Hg. 751 bolnikov (70,8 %) je imelo pridružene dejavnike tveganja za bolezni srca in ožilja. 408 (38,5 %) bolnikov je imelo ocenjeno srčno-žilno tveganje kot veliko oz. zelo veliko. Antihipertenzivna zdravila so bila uvedena pri 1.046 (98,7 %) bolnikih; pri 418 bolnikih (39,4 %) je bilo uvedeno kombinacijsko zdravljenje dveh ali več učinkovin v prosti ali fiksni kombinaciji. 331 bolnikov (31,6 %) je med spremljanjem opravilo obisk pri diplomirani medicinski sestri.

Raziskavo je zaključilo 929 (87,6 %) bolnikov. Povprečna vrednost sistoličnega KT ob zaključku raziskave je bila 135,4 ± 10,9 mm Hg, diastoličnega pa 81,8 ± 8,0 mm Hg, ciljni KT je dosegalo 63,3 % bolnikov.

Zaključek: Prepoznali smo nekatere priložnosti za izboljšanje vodenja. V prihodnje bo potrebno še okrepiti timsko obravnavo bolnikov ter spodbujati zdravnike k uvajanju kombinacijskega zdravljenja, najbolje v obliki dveh oziroma treh zdravilnih učinkovin v eni tableti.

1 Introduction

Almost half of the adult population in Europe has arterial hypertension (1); we do not have precise data on the prevalence of arterial hypertension in Slovenia. However, according to an epidemiological study carried out between 2007-2009, the estimated proportion of adults with arterial hypertension was as high as 64.3% (2), with significant regional differences in prevalence (3).

With respect to the number of deaths, arterial hypertension is the most important individual risk factor, with 10 million people dying each year from consequences associated with this condition (4,5).

Due to this high frequency, significant impact on morbidity and mortality, and easy identification and treatment of uncomplicated essential arterial hypertension, arterial hypertension is a public health problem. Early diagnosis, appropriate treatment, and monitoring of this and concomitant conditions are key to preventing complications of arterial hypertension (6).

By using a specific approach that includes prevention as well as detection and treatment of complications of arterial hypertension, most patients can be successfully managed at the primary health care level (7). A holistic approach to a patient with arterial hypertension, which also includes prevention and early diagnosis, requires a team approach. Team treatment of patients with arterial hypertension has been shown to be successful in many studies from abroad; a nurse's involvement has contributed to a greater reduction in blood pressure and improved blood pressure control (8-11).

Family medicine model practices were introduced to Slovenia in 2011 under a model practices project, where, in addition to a family physician and a health care assistant, the team also included a practice nurse for half of the working time (12). Practice nurses (PN) perform preventive examinations and are involved in the management of patients with certain common conditions, including arterial hypertension. Practice nurses follow pre-defined work protocols when treating patients (13) and are adequately trained for their work with additional compulsory education (14).

The team approach to the treatment of patients with arterial hypertension has a number of advantages and has been well received by patients (15). Data on the evaluation of patient management performance, which were also considered by a nurse, were obtained on a small sample of patients from individual clinics. This data indicates that a contribution of an additional team member would enhance the quality of management of

patients with arterial hypertension (16). The most recent data available on the success of blood pressure control in family medicine practices in Slovenia comes from the period before the introduction of model practices (17-19).

The purpose of the study was to determine how patients with arterial hypertension are treated by the team of the family medicine after introducing the model practices in Slovenia and to assess blood pressure control.

2 Methods

2.1 Research method

In the prospective observational study, for six months we monitored the treatment of previously untreated patients with essential arterial hypertension in family medicine practices in Slovenia, in whom we newly identified arterial hypertension. 158 family physicians from all over Slovenia participated, who also had a PN in their team with specific knowledge for working in a family medicine practice.

The study lasted from the 21st November 2017, when the first patient was included, to the 28th March 2019, when the last patient completed the study. We monitored both the process and the outcome of the treatment, which was evaluated by the value of blood pressure at the end of the six-month follow-up.

2.2 Subjects

Sequential adult patients with essential arterial hypertension who were not treated for arterial hypertension at the time of inclusion were then included. 1,060 patients from all over Slovenia participated.

2.3 Research process

Due to the observational research methodology, physicians were asked to manage their patients the same way they do in their normal clinical practice.

In accordance with the guidelines and the protocol for the management of patients with arterial hypertension in family medicine practices, the patient was expected to undergo at least one follow-up visit in addition to the visit at the beginning of treatment within the first 6 months; however, the number of control visits was left to the doctor to decide. The only wish was for all the patients to make their final visit 6 months after the inclusion in the study.

The data were provided by the participating family physicians in an electronic data entry form that did not allow blank fields or more than one answer to questions where only one answer had to be selected.

The standard for appropriate treatment at the time the study was implemented was the Slovenian guidelines for the treatment of patients with arterial hypertension from 2013 (20) and the protocol for the management of arterial hypertension in model practices, modified in 2017 (21).

2.4 Observed variables

We collected the following data:

- Basic demographic characteristics
- Additional risk factors for cardiovascular disease, organ damage or pre-existing cardiovascular disease (according to medical records)
- Calculated cardiovascular risk (according to medical documentation)
- Method of treatment of arterial hypertension (non-pharmacologically, drugs)
- Number of visits to the family physician
- Number of visits to a PN in a family medicine practice
- The regulation of blood pressure was determined by measuring blood pressure in the clinic. The patient's blood pressure was measured under standard protocol twice in a row one minute apart at each visit, and the average value of both measurements was taken into account (22).
- Blood pressure measurement was performed by a physician with an automatic blood pressure monitor, which gives the measured blood pressure values with an accuracy of 1mm Hg. The brand of the blood pressure monitor was not determined, but the meters were those used in the participating practices and checked in accordance with the rules on the procedure of regular verification of blood pressure monitors (23). Blood pressure was measured in a sitting position, in the arm with higher blood pressure in the event that the measured difference in blood pressure values between the left and right arm was greater than 10 mm Hg. The target values of blood pressure were set for each patient by his or her chosen physician, taking into account the definition of blood pressure target values in accordance with the 2013 guidelines, namely:
  - » blood pressure below 140/90 mm Hg (or for patients with diabetes, blood pressure below 140/85 mm Hg and, exceptionally in elderly patients, below 150/90 mm Hg).«

Table 1: Clinical characteristics of patients at the inclusion in the study.

Clinical features of the patients involved	Number (proportion)
Dyslipidaemia	506 (47.7%)
Obesity	375 (35.4%)
Diabetes	139 (13.1%)
Family history of early cardiovascular disease	233 (22.0%)
Smoking	225 (21.2%)
The presence of cardiovascular disease	68 (6.4%)
Proportion of patients with impaired one or more target organs	96 (9.1%)

The target blood pressure set by the family physician was below 140/90 mm Hg in 900 patients (84.9%), below 140/85 mm Hg in 132 patients (12.5%) (diabetic patients), and below 150/90 mm Hg (exceptions) in 15 patients (1.4%). For the rest of the patients, the target blood pressure as determined by the treating physician was not provided.

2.5 Statistical analysis of data

For numerical variables, the number (patients with data), maximum value (max), minimum value (min), the average, sample standard deviation (SD) are given. For categorical variables, the number and proportion by individual categories are given.

A basic statistical analysis of the data was performed, the average values of the variables and standard deviations (SD) were presented, and the proportions were calculated. No method was used to replace the missing values. All patients were treated for each variable with a numeric corresponding to the number of patients with specific data.

Calculations were performed using Microsoft Office Excel 2016 ©.

2.6 Ethical approval of the study

The study design was approved by the Republic of Slovenia National Medical Ethics Committee (decision No. 0120-111/2017-3 on 14. 3. 2017).

3 Results

3.1 Demographic and clinical characteristics of patients

1,060 patients were included, of whom 481 (45.0%) were women and 579 (55.0%) were men aged 22 to 94; the average age was 58.6 (SD 12.1 years).

867 (81.8%) of 1,060 patients had not been treated for arterial hypertension (AH) before, and 168 patients (15.8%) had previously received AH therapy, but had discontinued treatment for various reasons and did not receive antihypertensive drugs at the time of inclusion in the study; no previous treatment data were recorded for 25 (2.4%) patients.

The clinical characteristics of patients at inclusion in the study are shown in Table 1.

751 (70.8%) patients had at least one additional risk

Table 2: Patients included according to the degree of arterial hypertension.

Degree of arterial hypertension	Number (proportion) of patients
Mild (140-159 and/or 90-99 mm Hg)	171 (16.1%)
Moderate (160-179 and/or 100-109 mm Hg)	464 (43.8%)
Severe (≥180 and/or ≥110 mm Hg)	212 (20.0%)
Isolated systolic (≥140 and <90 mm Hg)	201 (19.1%)

Table 3: Treatment of patients with arterial hypertension.

Treatment of arterial hypertension	When included in the study, number (proportion)	After six months of monitoring number (proportion)
Only non-pharmacologically	14 (1.3%)	0
Antihypertensive drug in monotherapy	628 (59.3%)	401 (43.2%)
Combination of two or more antihypertensive agents (free combination or a combination tablet)	418 (39.4)	528 (56.8%)
Total	**1060**	**929**

factor for cardiovascular disease, most commonly dyslipidaemia. A high or very high cardiovascular risk was found in 408 (38.5%) participants based on risk factors, target organ damage or pre-existing cardiovascular disease.

Table 2 shows the patients included according to the degree of arterial hypertension. The largest group was patients with moderate arterial hypertension.

Arterial hypertension was detected in 403 patients (38.0%) at the first examination by a physician at a random visit, in 230 patients (21.7%) through a preventive examination by a PN in a family medicine practice, in 166 patients (15.7%) based on home-measured blood pressure or measurements in a pharmacy, 163 patients (15.4%) had problems associated with high blood pressure, in 49 patients (4.6%) AH was detected at a preventive examination by an occupational medicine specialist, and in 22 patients (2.1%) it was detected in another way. For 27 patients (2.5%) there is no data on the method of detecting AH.

3.2 Patient management in a family medicine practice

Table 3 shows the treatment of patients with arterial hypertension at inclusion in the study and after a six months' follow-up. The proportion of patients receiving a combination of two or more antihypertensive agents increased from the first to the final visit.

During follow-up, 398 visits were made to a PN by 331 patients (31.6%), and most patients visited PN only once.

Table 4 shows the number of intermediate visits made by patients to the physician. Almost two thirds of patients made only one intermediate visit (median 1, mode 1).

3.3 Blood pressure values and achieving target blood pressure values

Table 5 shows the blood pressure values at the start of the study, at the first follow-up and at the end of the

Table 4: Number of intermediate visits to the doctor from inclusion to the completion of a 6-month follow-up.

Number of intermediate visits	Number of patients	Proportion in % relative to the total number of patients
1	677	63.9%
2	206	19.4%
3	32	3.0%
4	9	0.8%
5	4	0.4%
6	1	0.1%
No final visit	131	12.4%
Total	**1,060**	**100%**

Table 5: Measured blood pressure values at the beginning of the study, at the first control and at the end of monitoring.

	Number of patients	Maximum BP value (mm Hg)	Minimum BP value (mm Hg)	Mean BP value (mm Hg)	SD (mm Hg)	95% confidence interval (mm Hg)
Visit at the inclusion in the research (systolic, diastolic)	1,057	250 133	120 53	165.2 96.2	14.5 10.0	(164.4 ; 166.1) (95.6 ; 96.8)
First control visit (systolic, diastolic)	967	216 125	105 57	144.3 84.5	14.7 9.3	(143.3; 145.2) (85.8 ; 87.0)
Visit at the end of the research (systolic, diastolic)	929	192 115	90 45	135.4 81.8	10.9 8.0	(134.7 ; 136.1) (81.3 ; 82.3)

follow-up after six months. There was a significant drop in blood pressure during six months of treatment: systolic BP of 30 ± 16.1 mm Hg, and diastolic BP of 14.4 ± 10.5 mm Hg.

Figure 1 shows how the value of systolic BP ranged from the first to the final visit with respect to the initial stage of hypertension.

Figure 2 shows how the value of diastolic BP ranged from the first to the final visit with respect to the initial stage of hypertension.

At the final visit, 588 patients reached the target BP, which represents 63.3% of patients who completed the study.

4 Discussion

By monitoring the treatment of patients with arterial hypertension in family medicine practices, we gained insight into the management of patients with arterial hypertension and the achievement of the target blood pressure. We identified some opportunities for improving treatment management. We were particularly surprised that treatment of only a third of patients with arterial hypertension included a PN. Given the proportion of patients with moderate and severe hypertension, a higher proportion would be expected to be treated with combination therapy, and thus possibly reach target blood

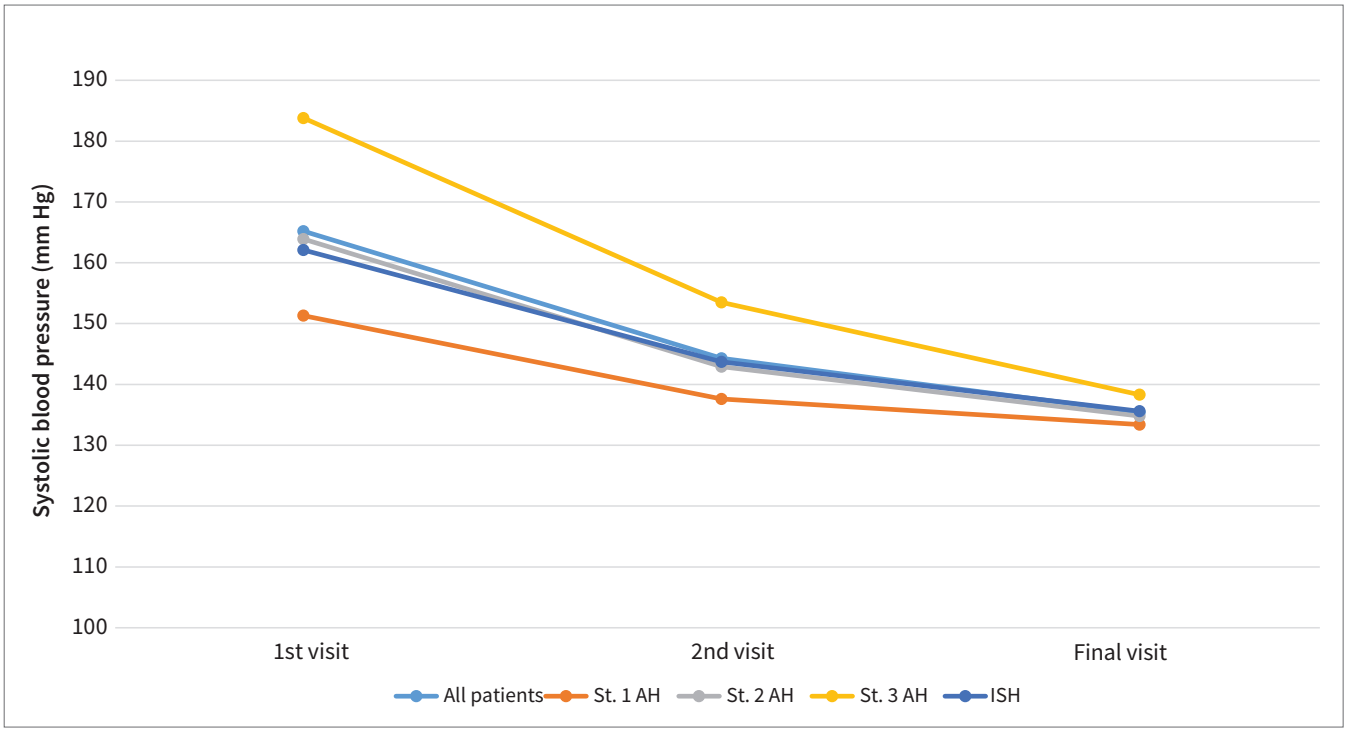

Figure 1: Demonstration of systolic blood pressure movement with respect to the degree of arterial hypertension between the first and final visit.
Legend: AH – arterial hypertension, ISH – isolated systolic hypertension.

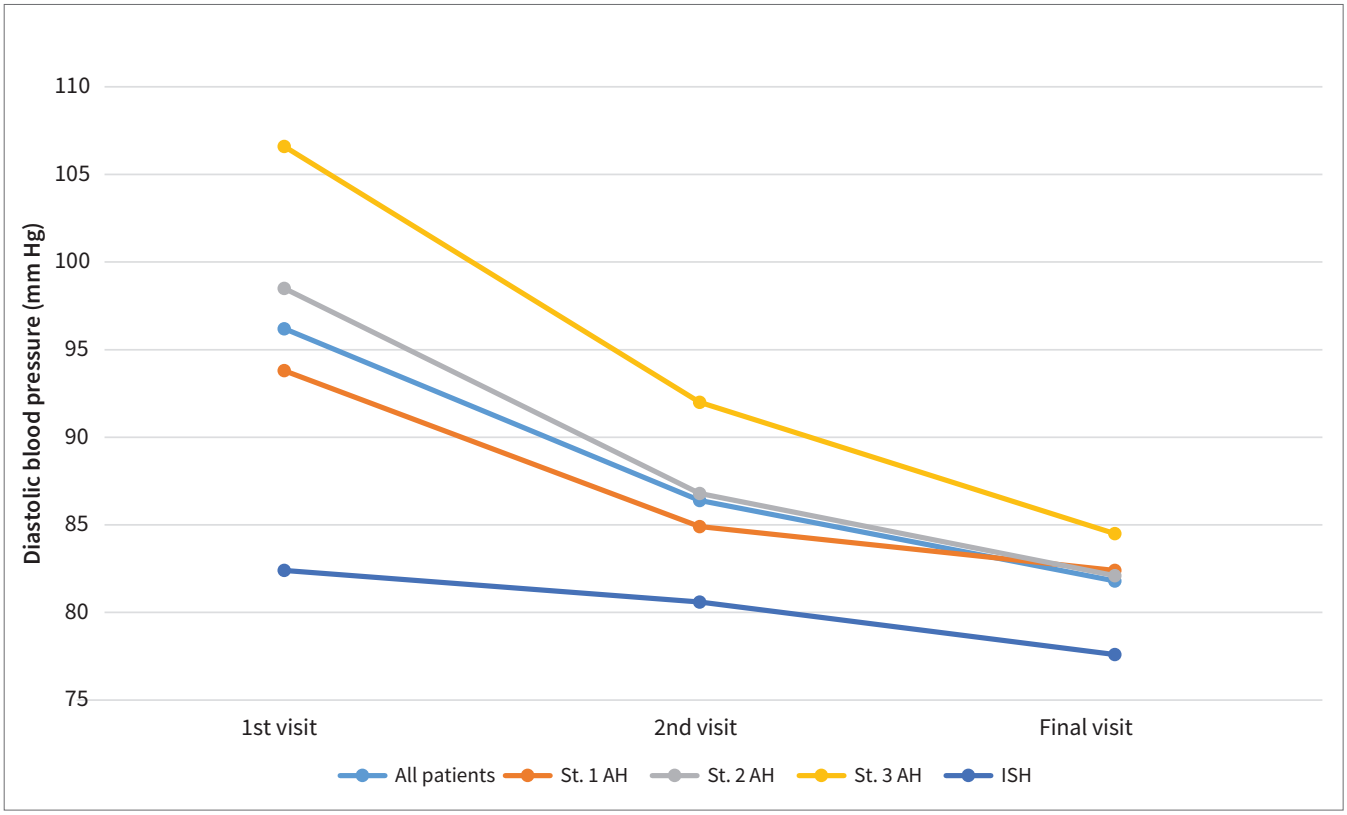

Figure 2: Demonstration of diastolic blood pressure movement with respect to the degree of arterial hypertension between the first and final visit.
Legend: AH – arterial hypertension, ISH – isolated systolic hypertension.

pressure values in some patients. This was achieved in almost two-thirds of patients who completed the follow-up, indicating significantly better blood pressure control than more than a decade ago (17-19). This is a comparable proportion of patients treated for hypertension, which was found by a broad-based campaign to measure blood pressure led by the International Society of Hypertension (24).

Among our subjects, the majority of patients were those who had not yet been treated for arterial hypertension. Many had concomitant risk factors present for cardiovascular disease, some had organs already affected by hypertension, and even pre-existing cardiovascular disease; a significant proportion had the cardiovascular risk estimated as high or very high. The data are comparable with the data from the European EURIKA study (25).

Preventive programs include screening patients to detect high blood pressure, therefore we would expect a higher frequently of detection during a preventive examination; however, in a large proportion of patients, high blood pressure was only identified during a random visit to the doctor. This is due to the fact that some clinics have only just begun to incorporate the new protocol, therefore only a small part of the defined population has received a preventive examination. Given the growing awareness of people about blood pressure management due to high-profile health education campaigns and projects, such as the month of May being the blood pressure measurement month (24), and the high prevalence of blood pressure measurement at home (26), it is encouraging that a significant proportion of patients recognize elevated blood pressure values themselves and subsequently visit a physician.

At the first visit, physicians prescribed antihypertensive treatment to most patients and more than half were prescribed antihypertensive medication as monotherapy; however, during the six-month follow-up period, the proportion of patients who were prescribed combination therapy increased, so that almost two-thirds of patients received combination therapy. The established way of prescribing antihypertensive drugs probably still reflects the recommendations of the 2013 guidelines valid at the time of the study (20), which offered the possibility of either prescribing monotherapy or combination therapy at the beginning of treatment. It is expected that the implementation of the new recommendations for the treatment of arterial hypertension (27,28), which recommend the introduction of combination therapy in

most patients at the beginning of treatment, preferably in a combination tablet, will increase the proportion of patients with combination therapy already with the introduction of antihypertensive drugs.

On average, there was a significant reduction in blood pressure in patients regardless of the degree of hypertension at the time of diagnosis. Nearly two-thirds of the patients who completed the six-month follow-up reached the target blood pressure values. The data show a significant improvement in blood pressure control compared to data published more than a decade ago, i.e. before the introduction of model practices in family medicine, where a comparable methodology was used to find that blood pressure was well controlled in 40.1% of patients with hypertension (18).

Improvements in awareness of the importance of blood pressure control have also been found elsewhere in the world, with such improvements being more significant in the developed world (29). According to data published in 2011, on average 38.8% of patients reached the target values of blood pressure (ranging from 32.1% – 47.5%) (25) among treated patients in Europe.

In England, a significant improvement in awareness of this importance of lowering and controlling blood pressure was also seen over the 17-year period from 1994 to 2011. Among patients treated for arterial hypertension based on team treatment with a PN included, the proportion of patients with controlled blood pressure increased from 33% to 63%, while blood pressure control in all patients diagnosed with arterial hypertension was only 37% (30). In neighbouring Austria, where a PN is not involved in patient management, 41% of treated patients with hypertension have controlled blood pressure; this data is comparable to the data for Slovenia before the introduction of model practices (31).

It is likely that more intensive antihypertensive treatment in patients whose blood pressure has not been adequately controlled would further increase the proportion of those patients who would achieve the set treatment goals. Therapeutic inertia of physicians by accepting higher blood pressure values as an acceptable norm is an important factor in not achieving treatment goals (32,33), which was also found in a previous study in which physicians took appropriate treatment action in less than half of cases of uncontrolled blood pressure (18).

From 2011, when the first family medicine practices were introduced in the health care system to the inclusion of the first patients in the study in 2017, strengthened by including a PN into the project of model practices, we expected that the team treatment of patients with hypertension would already be established. This turned out not to be the case. There are probably several reasons, including the problem of a patient's access to a PN, as one PN cares for patients of two clinics, which translated to about 4,000 people, both in prevention and in the management of patients with chronic conditions. Besides the accessibility of a PN, it is necessary to mention the quality of team treatment, which largely depends on the appropriate training of the PN and the length of time he or she had worked in family medicine practices (34).

The advantage of our study is that it took place in family medicine practices where a PN also participates in the management of patients, and it involved a large number of clinics and patients. Therefore, the data can reflect the real situation in Slovenia. The treatment goals in terms of blood pressure were determined for each patient by their personal physician, who took into account both the patient's characteristics and the recommendations written in the guidelines. Based on the literature data, a six-month follow-up after initiation of treatment is sufficient to assess blood pressure control (35).

Nevertheless, our study also has some limitations. The sample of doctors was not random, but pragmatically chosen. We allowed for the possibility that more motivated physicians participated in the treatment of patients with hypertension. Data provided by participating physicians were transferred from existing medical records, except for blood pressure measurements, which were requested to be performed in accordance with the protocol of measuring blood pressure in clinics. We do not have data on the reasons why some patients did not complete the follow-up, but we allowed for the possibility that among them are patients who have discontinued treatment; the proportion of patients who discontinue taking medication for chronic diseases is highest in the first six months after starting treatment (36). Blood pressure monitoring data are therefore only valid for the treatment of patients with arterial hypertension and do not replace blood pressure monitoring data in the population.

5 Conclusion

In a prospective observational study, we found that despite the relatively high proportion of treated patients reaching blood pressure targets, there are opportunities to improve the treatment approach by combining two or three active substances in one tablet, which is supported by the 2018 European hypertension guidelines and dictated by the protocol for the management of patients with arterial hypertension in family medicine practices,

modified in 2019. We have also recognized the need for greater involvement of a practice nurse in the treatment of patients with hypertension, which we consider especially important in newly identified patients with arterial hypertension, where the need for education for empowerment and participation in the treatment process is necessary.

Conflict of interest

None declared.

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References

1. Wolf-Maier K, Cooper RS, Banegas JR, Giampaoli S, Hense HW, Joffres M, et al. Hypertension prevalence and blood pressure levels in 6 European countries, Canada, and the United States. JAMA. 2003;289(18):2363-9. DOI: 10.1001/jama.289.18.2363 PMID: 12746359
2. Accetto R, Salobir B. Epidemiološka raziskava hipertenzije v Sloveniji - delno poročilo. In: Dolenc P. XVIII. Strokovni sestanek Sekcije za arterijsko hipertenizijo. Zbornik. 2009 Nov 26-27; Portorož, Slovenija. Ljubljana: Slovensko zdravniško društvo, Sekcija za arterijsko hipertenzijo; 2009.
3. Accetto R, Salobir B. Dolenc P. XIX. Strokovni sestanek Sekcije za arterijsko hipertenizijo. Zbornik. 2010 Nov 2-3; Portorož, Slovenija. Ljubljana: Slovensko zdravniško društvo, Sekcija za arterijsko hipertenzijo; 2010.
4. Cohen AJ, Brauer M, Burnett R, Anderson HR, Frostad J, Estep K, et al. Estimates and 25-year trends of the global burden of disease attributable to ambient air pollution: an analysis of data from the Global Burden of Diseases Study 2015. Lancet. 2017;389(10082):1907-18. DOI: 10.1016/S0140-6736(17)30505-6 PMID: 28408086
5. O'Brien E. The Lancet Commission on hypertension: addressing the global burden of raised blood pressure on current and future generations. J Clin Hypertens (Greenwich). 2017;19(6):564-8. DOI: 10.1111/jch.12998 PMID: 28560771
6. Schwartz CL, McManus RJ. What is the evidence base for diagnosing hypertension and for subsequent blood pressure treatment targets in the prevention of cardiovascular disease? BMC Med. 2015;13(1):256. DOI: 10.1186/s12916-015-0502-5 PMID: 26456709
7. Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. Milbank Q. 2005;83(3):457-502. DOI: 10.1111/j.1468-0009.2005.00409.x PMID: 16202000
8. Clark CE, Smith LF, Taylor RS, Campbell JL. Nurse led interventions to improve control of blood pressure in people with hypertension: systematic review and meta-analysis. BMJ. 2010;341:c3995. DOI: 10.1136/bmj.c3995 PMID: 20732968
9. Spies LA, Bader SG, Opollo JG, Gray J. Nurse-Led Interventions for Hypertension: A Scoping Review With Implications for Evidence-Based Practice. Worldviews Evid Based Nurs. 2018;15(4):247-56. DOI: 10.1111/wvn.12297 PMID: 29902358
10. Zhu X, Wong FK, Wu CL. Development and evaluation of a nurse-led hypertension management model: A randomized controlled trial. Int J Nurs Stud. 2018;77:171-8. DOI: 10.1016/j.ijnurstu.2017.10.006 PMID: 29100199
11. Dean SC, Kerry SM, Khong TK, Kerry SR, Oakeshott P. Evaluation of a specialist nurse-led hypertension clinic with consultant backup in two inner city general practices: randomized controlled trial. Fam Pract. 2014;31(2):172-9. DOI: 10.1093/fampra/cmt074 PMID: 24356073
12. Poplas Susič T, Švab I, Kersnik J. Projekt referenčnih ambulant družinske medicine v Sloveniji. Zdrav Vestn. 2013;82:635-47.
13. Vodopivec Jamšek V. Protokol za vodenje kroničnega bolnika v referenčni ambulanti družinske medicine. Zdrav Vestn. 2013;82:711-7.
14. Petek Šter M, Šter B. Pomen izobraževanja diplomiranih medicinskih sester v referenčnih ambulantah: primer arterijske hipertenzije. Obzornik zdravstvene nege. 2015;49(1):52-9. DOI: 10.14528/snr.2015.49.1.46
15. Petek Šter M. Referenčne ambulante - premik v zdravljenju hipertenzije. In: Dolenc P. XXVI. Strokovni sestanek Sekcije za arterijsko hipertenizijo. Zbornik. 2017 Dec 1; Ljubljana, Slovenija. Ljubljana: Slovensko zdravniško društvo, Sekcija za arterijsko hipertenzijo; 2017.
16. Fratina A. Primerjava kakovosti vodenja bolnikov z arterijsko hipertenzijo med referenčnimi in ambulantami družinske medicine, ki niso referenčne. Ljubljana: [A. Fratina]; 2017. p. 42.
17. Petek Šter M. Kakovost vodenja bolnikov z arterijsko hipertenzijo v ambulantah splošne medicine v Sloveniji. Ljubljana: Medicinska fakulteta; 2005.
18. Petek Šter M, Švab I. Nadzor krvnega tlaka pri bolnikih z arterijsko hipertenzijo v Sloveniji. Zdrav Vestn. 2007;76:397-403.
19. Pal M, Leskošek B, Pajntar M, Ferk P. Evaluation of arterial hypertension control in family practice in Slovenia. Zdrav Vestn. 2014;83:299-310.
20. Accetto R, Brguljan-Hitij J, Dolenc P, Blinc A, Cevc M, Čegovnik B, et al. Slovenske smernice za obravnavo hipertenzije 2013. Zdrav Vestn. 2014;83:727-58.
21. Petek Šter M, Bulc M, Accetto R, Petek D, Salobir B, Žontar T, et al. Vodenje arterijske hipertenzije in ukrepanje ob njenih poslabšanjih/zapletih. Modifikacija protokola-2017. Ljubljana: Nacionalni inštitut za javno zdravje; 2020. Available from: http://www.referencna-ambulanta.si/?p=985.
22. Muntner P, Shimbo D, Carey RM, Charleston JB, Gaillard T, Misra S, et al. Measurement of Blood Pressure in Humans: A Scientific Statement From the American Heart Association. Hypertension. 2019;73(5):e35-66. DOI: 10.1161/HYP.0000000000000087 PMID: 30827125
23. Pravilnik o postopku redne overitve merilnikov krvnega tlaka. Ur l RS. 2004(24); 2006(37).
24. Beaney T, Burrell LM, Castillo RR, Charchar FJ, Cro S, Damasceno A, et al.; MMM Investigators. May Measurement Month 2018: a pragmatic global screening campaign to raise awareness of blood pressure by the International Society of Hypertension. Eur Heart J. 2019;40(25):2006-17. DOI: 10.1093/eurheartj/ehz300 PMID: 31041440
25. Banegas JR, López-García E, Dallongeville J, Guallar E, Halcox JP, Borghi C, et al. Achievement of treatment goals for primary prevention of cardiovascular disease in clinical practice across Europe: the EURIKA study. Eur Heart J. 2011;32(17):2143-52. DOI: 10.1093/eurheartj/ehr080 PMID: 21471134
26. Petek-Ster M, Svab I, Klancic D. Proportion and characteristics of patients who measure their blood pressure at home: nationwide survey in Slovenia. Srp Arh Celok Lek. 2009;137(1-2):52-7. DOI: 10.2298/SARH0902052P PMID: 19370967

27. Williams B, Mancia G, Spiering W, Agabiti Rosei E, Azizi M, Burnier M, et al.; ESC Scientific Document Group. 2018 ESC/ESH Guidelines for the management of arterial hypertension. Eur Heart J. 2018;39(33):3021-104. DOI: 10.1093/eurheartj/ehy339 PMID: 30165516

28. Petek Šter M, Bulc M, Accetto R, Brguljan Hitij J, Petek D, Salobir B, et al. Vodenje bolnikov z arterijsko hipertenzije v ambulanti družinske medicine (Modifikacija protokola 2019). Ljubljana: Nacionalni inštitut za javno zdravje; 2019. Available from: http://www.referencna-ambulanta.si/wp-content/uploads/Protokol-vodenja-arterijske-hipertenzije-2019.pdf.

29. Mills KT, Bundy JD, Kelly TN, Reed JE, Kearney PM, Reynolds K, et al. Global Disparities of Hypertension Prevalence and Control: A Systematic Analysis of Population-Based Studies From 90 Countries. Circulation. 2016;134(6):441-50. DOI: 10.1161/CIRCULATIONAHA.115.018912 PMID: 27502908

30. Falaschetti E, Mindell J, Craig Knott C, Poulter N. Hypertension management in England: a serial cross-sectional study from 1994 to 2011. Lancet. 2014;383(9932):1912-9. DOI: 10.1016/S0140-6736(14)60688-7 PMID: 24881995

31. Rohla M, Haberfeld H, Tscharre M, Huber K, Weiss TW. Awareness, treatment, and control of hypertension in Austria: a multicentre cross-sectional study. J Hypertens. 2016;34(7):1432-40. DOI: 10.1097/HJH.0000000000000929 PMID: 27136315

32. Hyman DJ, Pavlik VN. Self-reported hypertension treatment practices among primary care physicians: blood pressure thresholds, drug choices, and the role of guidelines and evidence-based medicine. Arch Intern Med. 2000;160(15):2281-6. DOI: 10.1001/archinte.160.15.2281 PMID: 10927724

33. Farkaš J, Zaletel Kragel L, Acetto R. Obravnava bolnikov z arterijsko hipertenzijo: dosedanje izkušnje in možnosti za izboljšanje. Zdrav Vestn. 2008;77:97-102.

34. Klemenc-Ketiš Z, Poplas-Susič A. Are characteristics of team members important for quality management of chronic patients at primary care level? J Clin Nurs. 2017;26(23-24):5025-32. DOI: 10.1111/jocn.14002 PMID: 28793377

35. Rohla M, Tscharre M, Huber K, Weiss TW. Lowering blood pressure in primary care in Vienna (LOW-BP-VIENNA) : A cluster-randomized trial. Wien Klin Wochenschr. 2018;130(23-24):698-706. DOI: 10.1007/s00508-018-1374-4 PMID: 30112584

36. Osterberg L, Blaschke T. Adherence to medication. N Engl J Med. 2005;353(5):487-97. DOI: 10.1056/NEJMra050100 PMID: 16079372