

## ORIGINAL RESEARCH

## Experiences and Perceptions of Patients with Uncontrolled Hypertension Who are Dissatisfied with Their Hypertension Care

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**Background:** Hypertension control has been decreasing recently. We compared the experience and attitudes toward care between patients with uncontrolled hypertension who are more and less satisfied with that care to identify ways to improve their care.

**Methods:** Baseline survey of 3072 patients with diagnosed hypertension and repeated blood pressure measurements at or above 150/95 mmHg during clinic appointments at 21 primary care clinics of a large Midwestern multi-specialty medical group. Survey questions were about previous hypertension care satisfaction, the degree to which that care was patient-centered, their feelings of self-confidence and treatment burden in managing hypertension, and medication side effects.

**Results:** A total of 1697 patients completed surveys (response rate = 55%). Of the 1697 patients, the 24% who were most dissatisfied (scored 0 to 5 on a 0 to 10 scale of satisfaction) significantly differed from those most satisfied (scored 9 to 10) on all demographic and clinical characteristics as well as on every measure of care experience and health status. After adjusting for those characteristics, reports of patient-centered care, self-confidence, stopping the medication because of side effects, and the burden-someness of treatment were all significantly worse ( $P < .01$  to  $P < .001$ ) than for those with a higher rating of their hypertension care. Correlations among these measures were low, so the people with each problem with care seem to be different.

**Conclusions:** Many patients with uncontrolled hypertension are dissatisfied with their care, but that is associated with different problems for different people. Identifying and attending to these problems may provide opportunities to help them achieve better control. (J Am Board Fam Med 2021;34:1115–1122.)

**Keywords:** Blood Pressure, Hypertension, Patient Satisfaction, Patient-Centered Care, Primary Health Care, Surveys and Questionnaires

## Introduction

Hypertension is 1 of the most common and dangerous chronic medical conditions, affecting at least

29% of the adult population (46% if using the 2017 American Heart Association [AHA]/American College of Cardiology [ACC] redefinition) and contributing to the deaths of over 450,000 people per year from cardiac disease and strokes.<sup>1,2</sup> Despite good evidence that control of blood pressure (BP) greatly reduces these complications, the proportion of people with hypertension that is controlled was only 44% in 2018.<sup>3</sup> Although this represents an improvement from 32% in 1999, the frequency of control has declined since reaching a peak of 54% in 2013. As a result, the Surgeon General's recent Call to Action includes 3 goals: 1) make hypertension control a national priority, 2) ensure that communities support hypertension control, and 3) optimize patient care for hypertension control.<sup>4</sup>

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Since it is widely recognized that the inadequate level of hypertension control is partly attributable to clinical inertia and partly to patient adherence, it is surprising that so few studies have been published that clarify the role that patient attitudes and experiences play in controlling BP.<sup>5</sup> Several studies have demonstrated that patients who have their hypertension controlled are more satisfied than those who do not.<sup>6–8</sup> Others have shown that lower satisfaction with care is a barrier to adherence to hypertension treatment and it is well known that medication adherence is an important contributor to hypertension control.<sup>9–12</sup> Therefore, improvement in BP control may depend in part on identifying and improving the reasons for dissatisfaction with hypertension care, especially for patients with poor control.

Our large pragmatic trial of telehealth care for patients with uncontrolled hypertension has provided an opportunity to identify and survey a large cohort of typical patients with uncontrolled hypertension at baseline (before any intervention). We have used this information to understand correlates of dissatisfaction with hypertension care for these patients in hopes of identifying factors that could be improved.

## Methods

The Hyperlink 3 study is a clinic-randomized pragmatic trial comparing pharmacist and home blood pressure monitoring by telehealth with best practice clinic-based care in 21 primary care clinics of a multi-specialty group practice in Minneapolis (ClinicalTrials.gov, identifier: NCT02996565).<sup>13</sup> As the intervention and the best practice intervention are both considered standards of care, a waiver of informed consent was granted by the HealthPartners Institutional Review Board for study enrollment and participation. Patients could later opt out of the use of their data for analysis as part of the survey process. All patients who met the inclusion criteria during an office visit were automatically enrolled when a medical assistant set up a referral order for follow-up care and signed it by the patient's physician. This resulted in a much larger and more representative cohort of eligible patients being included in the study. The inclusion criteria included those aged 18 to 85 years, 2 or more encounters with a hypertension diagnosis in the past 24 months, a visit with their

assigned primary care provider in the past 12 months, were currently in the clinic where their clinician practices, and had uncontrolled BP defined as  $\geq 150$  mmHg systolic or  $\geq 95$  mmHg diastolic on duplicate measurements within the same encounter as well as on the last measurement at the most recent prior encounter.

Every such patient was sent a survey in English or Spanish per language preference with a token incentive of \$2 within 1 week of the index encounter with telephone follow-up to non-responders to complete the survey over the phone. Initial surveys also included a language block in Somali and Hmong (the most common other languages in our community), inviting recipients to call in and complete the survey in the language of their choice. The cover letter for the initial mailing and telephone scripts included the elements of informed consent and stated that returning the survey implied consent to use their survey data in the study. All survey respondents were thanked with an additional \$10 gift card. The survey was designed to take 10 to 15 minutes to complete and included questions about demographic characteristics, self-rating of general health, rating of BP care, patient-centered care, confidence in managing blood pressure, medication side effects, and perceived burden of BP care.

The satisfaction with care rating was a modified version of the CAHPS question, worded as follows: "Using any number from 0 to 10, where 0 is the worst possible health care for your blood pressure and 10 is the best possible health care for your blood pressure, what number would you use to rate your health care for your blood pressure in the past 6 months?" Respondents were categorized into 3 groups based on their satisfaction with their hypertension care: 9 to 10, 6 to 8, and 0 to 5, with cut-points chosen to separate the top and bottom quartiles from the middle 2 quartiles.

Respondents rated the frequency with which they experienced 5 aspects of patient-centered care (eg, "given choices about treatment to think about," "asked to talk about any problems with your medicines or their effects"). Responses to each item were categorized as frequent ("Almost always," "Most of the time") or infrequent ("Sometimes," "Generally not," "Almost never"). A patient-centered care composite was calculated for each respondent as the number of items rated 'frequent.'

Similarly, respondents rated 5 items of their sense of confidence in managing hypertension (eg, "include

taking blood pressure medicine in your daily routine,” “keep your blood pressure below your target number”). Responses to each item were categorized to reflect high (“Extremely,” “Very” confident) or low (“Moderately,” “Somewhat,” “Not at all” confident) self-efficacy. A self-efficacy composite was the sum of items rated as high confidence.

Respondents reported on how much of a problem each of 6 common side effects of antihypertensive medication (eg, tiredness, swelling of feet or legs) had been over the prior 6 months (ie, “Very big,” “Big” rather than “Moderate,” “Somewhat,” “Not”). A side effects composite classified each respondent as to whether any or none of the side effects had been a very big or big problem.

Finally, respondents rated how much of a problem they have with measuring their blood pressure, appointments (clinic visits, phone visits, scheduling visits), and spending time managing hypertension. A treatment burden classified each respondent as to whether any or none of these activities was a very big or big problem.

Bivariate comparisons of demographic (age, sex, race, ethnicity, education, employment, household income) and clinical (self-reported health quality, diastolic blood pressure) characteristics measured at enrollment across hypertension care satisfaction groups were assessed using chi-square statistics and Fisher’s exact tests. Multivariate logistic regression was used to compare responses to individual survey items among less satisfied respondents (6 to 8, 0 to 5) relative to those who were very satisfied (9 to 10) with hypertension care. Responses to items endorsed by fewer than 20% of respondents overall were compared across hypertension care groups using log-binomial regression. Survey item models adjusted for demographic and clinical characteristics that differed across hypertension care satisfaction groups. Where noted, covariates were limited to age, sex, race, and ethnicity to reduce the risk of overfitting.

Multinomial logistic (patient-centered care, self-efficacy), logistic (side effects), and Poisson (self-management) regression models compared composite scores across hypertension care satisfaction groups. These models adjusted for demographic and clinical characteristics and the remaining 3 composite scores except for the treatment burden model, which was limited to adjusting for age, sex, race, ethnicity, and the other composites.

## Results

During the 18 months of enrollment, a total of 3796 patients met the inclusion criteria; 3072 were automatically enrolled as a result of being referred for follow-up care by their care teams. All enrolled patients were sent a baseline survey, and 1697 patients returned completed surveys for a response rate of 55.2%. Respondents were more likely to be female (54.3% vs 52.1%) and were older (61.7 vs 58.3 years), less likely to be Asian (4.1% vs 10.6%), more likely to be on antihypertensive medications (93.1% vs 90.0%) and had similar systolic BP but lower diastolic BP (92.8 mmHg vs 95.4 mmHg).

Table 1 shows the demographic and medical characteristics of all respondents as well as a breakdown by the 3 satisfaction rating categories. One quarter (24%) of respondents gave ratings of 0 to 5 to their hypertensive care, and another half (48%) gave 6 to 8 ratings while only 29% gave 9 to 10 ratings. The most dissatisfied patients were younger and more likely to be male, Black or other race, and to have a high school or less education. They were also more likely to have low income, report having only fair or poor general health, and have diabetes. Their index systolic blood pressure levels were similar to the other satisfaction groups, but their diastolic BP was 3 mmHg higher.

Potential reasons for dissatisfaction are displayed in the next 4 tables, along with the percentage of respondents in each satisfaction group that had those reasons. There were wide, significantly different reports among those with different degrees of satisfaction. For example, Table 2 demonstrates that the most dissatisfied patients are only about half as likely as the most satisfied to report patient-centered care, with the intermediate dissatisfaction group being roughly midway between the 2 extremes. The most dissatisfied also are only half as likely to report confidence in their ability to care for their blood pressure and only 40% as confident that they can keep their BP below their target (Table 3).

Two to 4 times as many of these dissatisfied patients also report having had each of 6 potential medication side effects as a very big or big problem in the past 6 months compared with the most satisfied group (Table 4). They are also only half as likely to report satisfaction with their BP medicine and are 50% more likely to report having changed or stopped their BP medicine because of symptoms

**Table 1. Characteristics of Patients in Groups with Different Degrees of Hypertension Care Satisfaction**

Characteristics	Total	Hypertension Care Quality Rating Groups			P value <sup>†</sup>
		9 to 10	6 to 8	0 to 5	
N (%)	1697	482 (28.4)	809 (47.7)	406 (23.9)	
Age, mean	61.7	62.5	62.2	59.8	.007
Sex, %					.005
Female	54.5	60.6	51.3	53.7	
Male	45.5	39.4	48.7	46.3	
Race/ethnicity, %					.007
Non-Hispanic White	68.5	72.8	69.3	61.6	
Non-Hispanic Black	16.1	12.2	15.8	21.4	
Non-Hispanic Other	12.8	13.1	12.1	14.0	
Hispanic any race	2.5	1.9	2.7	3.0	
Education, %					.02
High school or less	33.3	31.7	31.6	38.6	
Technical school or some college	35.6	35.5	35.1	36.9	
College grad or more	31.1	32.8	33.3	24.5	
Employment, %					.003
Employed	42.0	39.0	43.7	41.8	
Retired	40.8	44.5	41.3	35.3	
Other	17.2	16.5	14.9	22.8	
Income, %					<.001
<\$20,000	20.6	16.7	18.4	29.8	
\$20,000-\$49,999	30.0	28.7	31.4	28.7	
\$50,000-\$99,999	31.9	36.8	31.6	26.6	
>\$100,000	17.5	17.9	18.6	14.9	
Diabetes, %					.37
No	75.0	77.2	74.7	73.1	
Yes	25.0	22.8	25.3	26.8	
Cardiovascular disease, %					.69
No	81.7	80.9	82.6	81.0	
Yes	18.3	19.1	17.4	19.0	
Health status, %					<.0001
Excellent/Very good	26.8	39.8	26.6	11.8	
Good	46.4	42.1	51.1	42.1	
Fair/Poor	26.8	18.1	22.3	46.1	
Index systolic blood pressure, mean	164.1	163.2	164.2	165.1	.22
Index diastolic blood pressure, mean	92.8	91.9	92.4	94.6	.02

<sup>†</sup>Based on results from Chi-square, Fishers exact test.

they thought were related to it. Finally, the most dissatisfied patients are at least twice as likely as the most satisfied patients to report each of 5 tasks related to hypertension care as a “big” or “very big” problem. However, the overall proportions reporting these as highly burdensome was low (Table 5). In each table, the intermediately dissatisfied patients have intermediate responses, and all the differences between highly satisfied and highly dissatisfied groups are highly significant ( $P < .01$  or  $P < .001$ ).

To rule out that these large differences were related to differences in patient demographic or clinical characteristics, item responses in Tables 2 through 5 were adjusted for demographic and relevant clinical characteristics, with only minimal change in the predicted response likelihoods and no differences in assessment of statistical significance.

Finally, we explored the possibility that a subset of patients who were among the most dissatisfied with hypertension care had provided consistently low ratings of patient-centered care, self-confidence,



**Table 2. Proportion of Patients in Each Hypertension Care Satisfaction Group Who Reported Receiving Patient-Centered Care “Most of the Time” or “Almost Always” Over the Past 6 Months**

	Total (%)	Hypertension Care Satisfaction		
		9 to 10 (%)	6 to 8 (%)	0 to 5 (%)
Asked for your ideas when you and your healthcare team made a treatment plan	47.9	65.0	45.7**	32.4***
Given choices about treatment to think about	50.0	67.5	48.1***	32.9***
Asked to talk about any problems with your medicines or their effects	61.9	76.7	62.0***	43.7***
Asked to talk about your goals in caring for your blood pressure	49.4	66.9	47.0***	33.6***
Satisfied that all the people involved in your care were “on the same page”	74.9	93.2	75.1***	52.9***
Number of patient-centered items rated “Most” or “Almost Always” (0 to 5)	2.8	3.6	2.7***	1.9***

\* $P < .05$ , \*\* $P < .01$ , \*\*\* $P < .001$  comparing patient-centered care among patients in the 6-8 or the 0-5 care quality group to patient-centered care in the 9-10 care quality group.

problems with side effects, and burdensome treatment. The patient-centeredness and self-efficacy composites (Spearman  $r = 0.35$ ) and symptom and treatment burden (tetrachoric  $r = 0.31$ ) were modestly correlated, the remaining relationships among composites were quite weak (Spearman  $r = 0.08$ - $0.12$ ). In addition, relationships between the hypertension care groups and the patient-centered care, self-confidence, and treatment burden composites remained significant after accounting for patient characteristics as well as the remaining 3 composites.

## Discussion

This large population of patients with uncontrolled hypertension has provided an opportunity to learn that a large share of these patients (72%) rate their hypertension care as being below a 9 to 10 on a 10 point scale where 0 is the worst possible health care for blood pressure and 10 is the best possible. More important, that dissatisfaction with hypertension care was strongly associated with their reports of less

patient-centered care, lower self-efficacy in managing their hypertension treatment, more big/very big problems with BP medication side effects and feeling that caring for their high blood pressure is burdensome. Most important, these differences are not due to differences in the demographic or clinical characteristics of the patients, and there seem to be separate subgroups of dissatisfied patients whose dissatisfaction is associated with either side effect problems, treatments being burdensome, care lacking patient-centeredness, or feelings of low self-efficacy.

Satisfaction with care has previously been shown to be associated with better hypertension control, possibly by improving adherence to medications and other treatments. In separate studies, reports led by Chen, Lopez-Torres Lopez, and Gray have each shown that patients with BP controlled are more satisfied with their care than those that are uncontrolled.<sup>6-8</sup> Gray also showed that having all patient-centered care measures in place versus none was associated with an absolute 75% increase in the likelihood of receiving a top rating, and patient ratings

**Table 3. Proportion of Patients in Each Hypertension Care Satisfaction Group Who Reported Being “Extremely” or “Very Confident” in Self-Care Over the Past 6 Months**

How Confident Are You That You Can:	Total (%)	Hypertension Care Quality		
		9 to 10 (%)	6 to 8 (%)	0 to 5 (%)
Contact your health care team from home when you have a question or concern?	71.4	86.0	72.2***	52.2***
Include measuring your blood pressure at home in your weekly routine?	58.5	69.8	57.7***	46.8***
Know your blood pressure target numbers?	65.9	76.3	67.9**	49.2***
Keep your blood pressure below your target number?	25.5	36.4	23.9***	15.3***
Include taking blood pressure medicine in your daily routine?	83.8	90.8	85.0**	73.0***
Number of confidence items ranked “Extremely” or “Very Confident” (0 to 5)	2.9	3.4	2.9**	2.2***

\* $P < .05$ , \*\* $P < .01$ , \*\*\* $P < .001$  comparing self-efficacy among patients in the 6-8 or the 0-5 care quality group to self-efficacy in the 9-10 care quality group.

**Table 4. Proportion of Patients in Each Hypertension Care Satisfaction Group Who Reported Side Effects as a “Big” or “Very Big” Problem Over the Past 6 Months**

	Total(%)	Hypertension Care Quality		
		9 to 10(%)	6 to 8(%)	0 to 5(%)
Tiredness	17.9	15.3	15.3	26.7
Feeling dizzy, lightheaded, or faint <sup>†</sup>	7.3	5.6	6.3	11.4**
Swelling of feet and legs <sup>†</sup>	9.6	5.8	8.7	15.9***
Coughing <sup>†</sup>	7.0	3.4	5.9*	13.8***
Frequent urination <sup>†</sup>	11.6	8.4	11.7	15.6**
Sexual symptoms <sup>†</sup>	9.1	5.6	9.2	13.2***
Any side effect is a “big” or “very big” problem	36.8	28.8	36.2	47.3
In the past 6 months, have you changed or stopped your blood pressure medicine because of symptoms you think were related to your blood pressure medicine? (% Yes)	22.1	18.4	21.3	28.1**
How satisfied are you with the blood pressure medicine you’ve taken in the past 5 months? (% “Very”/“Somewhat satisfied”)	53.8	70.0	53.3***	34.1***

\* $P < .05$ , \*\* $P < .01$ , \*\*\* $P < .001$  comparing side effects among patients in the 6-8 or the 0-5 care quality group to side effects in the 9-10 care quality group.

<sup>†</sup>Adjusted only for age, sex, race, and ethnicity.

of physician quality predicted BP control. The 1 potentially contrary study by Rao in a survey of 3500 patients aged 65 years or older found no correlation between patient ratings of practice quality and objective measures of their hypertension is controlled.<sup>14</sup>

One of the most likely mechanisms described in the literature for satisfaction leading to better control is via improved adherence to treatment. Treatment adherence is a major contributor to poor BP control.<sup>9,10</sup> In an analysis of 2128 surveys of hypertensive patients in safety-net clinics, Fortuna et al found that both efforts to involve the patient in decision making and the patients’ overall rating of care received were associated with greater medication adherence and adherence was associated with better control.<sup>11</sup> Zyoude et al adjusted for covariates but still found that treatment satisfaction in 410 hypertensive patients was strongly associated with treatment adherence.<sup>12</sup> They suggested that “low treatment satisfaction may be an important barrier for achieving high rates of adherence to treatment.” Unfortunately, we were unable to measure adherence in this study.

Besides reinforcing that concept with a larger sample of patients with uncontrolled hypertension, the analyses suggest that dissatisfaction is not primarily due to the characteristics of patients. Instead, it seems to be associated with particular experiences and perspectives about that care. Rather than the same people having all these problems to some

degree, it seems that individual patients have had individual experiences with or specific reactions to hypertension treatment that may need to be addressed for them to become more satisfied.

Understanding and addressing the specific correlates of dissatisfaction among patients with uncontrolled hypertension may be necessary for these patients to achieve control. If that can be accomplished, it could also lead to improved satisfaction ratings. Prospective studies of these possibilities seem worthwhile.

The main limitation in this study is its cross-sectional and observational nature, making it impossible to attribute causation to these associations. We also lack similar data about patients with controlled hypertension, although responses to that question about satisfaction with care among all patients in this care system usually are in the range of 80%, rating a 9 or 10 out of 10. We also lack objective information about the medication adherence of these patients, preventing any demonstration of an association between dissatisfaction with care and adherence to treatment. However, the size and representativeness of the population and the strength of these associations provide a reason to believe that these findings may be both important and generalizable.

For those interested in pursuing these findings, several questions seem worthwhile:

1. Does change in satisfaction correlate with improvements in patient-reported patient-centered care,

**Table 5. Proportion of Patients in Each Hypertension Care Satisfaction Group Who Reported Treatment Burden as a “Big” or “Very Big” Problem**

Considering Everything You Have to Do to Take Care of Your Blood Pressure, How Much of a Problem are Each of The Following:	Total (%)	Hypertension Care Quality		
		9 to 10 (%)	6 to 8 (%)	0 to 5 (%)
Measuring your blood pressure: frequency, time spent, or inconvenience <sup>†</sup>	5.1	3.0	4.3	9.3**
Clinic visits: frequency or time spent for these visits <sup>†</sup>	4.9	3.2	4.2	8.5**
Phone visits: frequency or time spent for these calls <sup>‡</sup>	2.5	0.3	2.2	5.4**
Scheduling clinic visits, phone visits, or other appointments and reorganizing your schedule around these <sup>†</sup>	3.5	1.6	2.6	7.5***
Time away from work or your normal routine for activities related to your blood pressure care <sup>†</sup>	3.8	0.7	3.5*	7.9***
Any treatment is a “Big” or “Very Big” problem <sup>§</sup>	10.4	5.4	10.0*	17.0**

\* $P < .05$ , \*\* $P < .01$ , \*\*\* $P < .001$  comparing treatment burden among patients in the 6-8 or the 0-5 care quality group to treatment burden in the 9-10 care quality group.

<sup>†</sup>Adjusted for age, sex, race, and ethnicity.

<sup>‡</sup>Model is unadjusted.

<sup>§</sup>Adjusted for age, sex, race, ethnicity, patient-centered care, self-efficacy, and side effect composites.

confidence in self-care, medication side-effects, and burden of hypertension treatment?

- Does improved BP control or lower BP correlate with improvements in patient-reported patient-centered care, confidence in self-care, medication side-effects, and burden of hypertension treatment or with satisfaction?

Given the prevalence of dissatisfaction in this cohort of patients with uncontrolled hypertension and the importance of improving hypertension control, it seems important to verify these findings and test their relationship to treatment adherence. That information could lead to care management approaches that might improve satisfaction, adherence, and control of this important and dangerous condition.

To see this article online, please go to: <http://jabfm.org/content/34/6/1115.full>.

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