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Patient attitudes and experiences that predict medication discontinuation in the Veterans Health Administration

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Abstract

Objectives: Polypharmacy is associated with adverse medication effects. One potential solution is deprescribing, which is the intentional, proactive, rational discontinuation of a medication that is no longer indicated or for which the potential harms outweigh the potential benefits. We identified patient characteristics, attitudes, and health care experiences associated with medication discontinuation.

Design, setting, and participants: We conducted a national mail survey, with the use of the Patient Perceptions of Discontinuation (PPoD) instrument, of 1600 veterans receiving primary care at Veterans Affairs (VA) medical centers and prescribed 5 or more concurrent medications.

Main outcome measures: The primary outcome was the response to: “Have you ever stopped taking a medicine (with or without your doctor’s knowledge)?” The primary predictors of interest were 8 validated attitudinal scales. Other predictors included demographics, health status, and health care experiences.

Results: Respondents ($n = 803$; adjusted response rate 52%) were predominantly male (85%); non-Hispanic white (68%), 65 years of age or older (60%), and with poor (16%) or fair (45%) health. Participant attitudes toward medications and their providers were generally favorable. One in 3 patients (34%) reported having stopped a medicine in the past. In a multivariable logistic regression model ($P < 0.001$; pseudo- $R^2 = 0.31$; c-statistic = 0.82), factors associated with discontinuation included being told or asking to stop a medicine, greater interest in deprescribing and shared decision making, and higher education. Factors associated with decreased discontinuation were more prescriptions, higher trust in provider, and seeing a VA clinical pharmacist.

Conclusion: More highly educated patients with interest in deprescribing and shared decision making may be more receptive to discontinuation discussions. Future research evaluating how to

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Supplementary Data

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incorporate this survey and these findings into clinical workflow through the design of clinical interventions may help to promote safe and rational medication use.

Medication use is increasingly prevalent, escalating risks of adverse medication effects for patients and negative impacts on the health care system in general, such as increased hospitalizations and costs.¹⁻⁵ Although polypharmacy, frequently defined as concurrent use of 5 or more medications,⁶ has been targeted in the past for improvement efforts, many interventions now have the more focused aim of reducing inappropriate prescribing. One such method is deprescribing.⁷⁻¹⁰ Deprescribing is the intentional, proactive, rational discontinuation of a medication that is no longer indicated or whose potential harms outweigh potential benefits.^{11,12} Of import, this decision-making process ideally includes patient preferences, thus also representing patient-centered care.^{13,14}

Patients generally prefer fewer medicines and would welcome a reduction in prescriptions.¹⁵⁻¹⁸ However, this preference does not necessarily translate into actual discontinuation, owing to both patient- and provider-related barriers to deprescribing.¹⁹⁻²¹ Patients may generally prefer to take fewer medications, but they may express reluctance to stopping a specific medication.²² Some providers may have concerns that patients will feel abandoned or upset as a result of deprescribing; others may worry that patients will perceive their efforts to reduce medication solely as a cost-cutting or rationing measure.²³ Clinicians also report time constraints and limited communication with other providers as system-level factors reducing their ability to deprescribe.²⁴

Additional difficulties implementing deprescribing may derive from the sometimes contradictory perceptions of patients and providers about the frequency with which discontinuation occurs. For example, clinicians have reported discontinuing medications more often than patients recalled.^{22,24}

Objectives

Ultimately, identifying patient characteristics and clinical experiences associated with discontinuation will facilitate the development of interventions to promote appropriate deprescribing; greater understanding of these patient-related factors will enable tailored interventions to optimize effectiveness. To that end, we undertook this survey study to characterize which patients are more or less likely to report discontinuing medications.

Methods

Study design, setting, and population

We conducted a national mail survey of veterans receiving primary care through the U.S. Department of Veterans Affairs (VA). To identify a sampling frame of patients with polypharmacy, we queried the VA Corporate Data Warehouse to find all VA patients with 5 or more concurrent prescriptions (each with a minimum duration of 28 d) for 90 days (December 17, 2014, to March 16, 2015), at least 1 primary care visit during that same time frame, and at least 1 additional visit in the preceding year. We identified 448,155 patients and randomly sampled 1600 participants. Women constituted 5.7% of the population

sampling frame but were oversampled to constitute 15% of the mail-out sample to ensure adequate representation and enable comparisons by sex. The study was approved by the VA Boston Healthcare System Institutional Review Board.

Survey instrument

The Patient Perceptions of Discontinuation (PPoD) instrument is a psychometrically validated survey that consists of 43 items related specifically to medication discontinuation and 14 demographic and background items (Appendix 1).²⁵ It includes 3 previously established multi-item scales: Beliefs About Medications Questionnaire (BMQ)–Overuse, a 4-item scale addressing perceptions about overreliance on medicines; Trust-Provider, a 5-item scale about belief that providers do what is best for patients; and CollaboRATE, a 3-item measure of shared decision making.^{26–28} Five additional PPoD scales consist of a combination of new items and selected items from preexisting scales^{29,30}: Medication Concerns is a 6-item scale about short- and long-term medication effects; Provider Knowledge consists of 3 statements about the medical acumen of the primary care provider (PCP); Interest in Stopping Medicines has 3 questions assessing current level of interest in discontinuation; Patient Involvement in Decision Making contains 3 items about the patient's interest in participating in planning his or her medical care; and Unimportance of Medicines is a 3-item measure of patients' perceptions of the potential harms or low benefit of 1 or more of their current medicines.

We modified CollaboRATE responses to use a 1–5 scale to maintain consistency with other scales: from 1 = “no effort” to 5 = “every effort.” All other PPoD scales use a 5-point response scale where 1 = “strongly disagree” and 5 = “strongly agree,” with a neutral midpoint. The internal consistency reliability (Cronbach alpha) in this sample for the established scales was 0.77 for BMQ, 0.57 for Trust-Provider, and 0.93 for Collabo-RATE, and for the new scales it was as follows: Medication Concerns, 0.82; Provider Knowledge, 0.86; Interest in Stopping Medicines, 0.77; Patient Involvement in Decision Making, 0.61; and Unimportance of Medicines, 0.70. Ten items address actual and hypothetical deprescribing experiences. Background items in PPoD include self-report of overall physical health, physical and mental health conditions, number of prescription and nonprescription medications taken daily, frequency of health care visits in the past year, and whether the respondent receives assistance managing medications. Demographics included age, race, ethnicity, marital status, and education.

Survey administration

We mailed participants a letter introducing the survey and announcing its upcoming arrival. One week later, we mailed the survey instrument, a \$5 incentive to spend at a VA store, and an opt-out postcard. Nonrespondents received a reminder letter 2 weeks later, and a second survey was sent to remaining nonrespondents after 2 additional weeks. Participants who could not be contacted (mail undeliverable or notification received of their death) were removed from the administration cycle. All returned questionnaires were manually entered into a database; 10% were randomly checked for data entry accuracy. All responses were anonymous.

Measures

Primary outcome—The study's primary outcome was the response to the question: "Have you ever stopped taking a medicine (with or without your doctor's knowledge)?" Response options were "No, I am taking all of the same medicines I have ever started taking," "I am not sure or can't remember," and "Yes, I have stopped a medicine." We restricted analyses to those who answered "No" or "Yes."

Predictor variables—Independent variables were categorized as demographic, attitudinal, or experiential. Demographic variables included the health status items. Our primary predictors of interest were the 8 attitudinal scales described above. Experiential items included self-report about whether the patient had ever asked his or her doctor to stop a medicine; had seen a VA PCP, VA specialist, or VA clinical pharmacist in the past year; had ever received conflicting advice from different providers; and had ever been told to stop a medicine.

Analysis—To identify the variables included in our final models, we proceeded in several steps. We began with verification of data validity and integrity by examining item frequencies, correcting out-of-range values, and adjusting contradictory response patterns for items involving screener questions or other contingencies. We conducted bivariate tests of association (chi-square tests and *t* tests as applicable) between all patient demographic and attitudinal variables and the dichotomous primary outcome of whether or not the respondent had ever stopped taking a medicine. Variables significant at the 0.1 level were retained for inclusion in the subsequent logistic regression model. We evaluated the relationship between the included variables with a correlation matrix, setting a correlation coefficient of 0.8 as indicative of problematic collinearity. All analyses were conducted in SAS (version 9.3).

Results

Characteristics of study sample

Of the 1600 veterans in the mail-out sample, 53 could not be contacted, primarily because of inaccurate addresses ($n = 40$). We obtained 803 completed surveys for an adjusted response rate of 52%. Nonrespondents were not statistically different from respondents regarding race and region of the country, but respondents were older (mean age 67.0 vs. 65.5 y; $P = 0.01$) and took slightly fewer medications (mean 10.1 vs. 10.5; $P = 0.02$). Regarding data quality, the median percentage of missing responses per item on the substantive questions was 0.88% (range 0%–6.3%); the median percentage missing on the demographic questions was 0% (range 0%–1.5%).

Respondents were predominantly male, as per sampling design (85%); 68% identified as non-Hispanic white and 17% as non-Hispanic black (Table 1). The majority (60%) were older than age 65 years, with generally poor (16%) or fair (45%) health. Regarding prescription medications, 6% reported taking fewer than 5, 38% reported 5 to 8, 35% reported 9 to 12, and 21% reported 13 or more. More than one-third of the respondents (36%) had a hospital admission in the preceding year.

Participant attitudes toward medications and their providers were generally favorable (Table 2). Respondents disagreed that medicines were unimportant and overused, with mean scores of 2.39 and 2.91 on the Unimportance of Medicine and the BMQ-Overuse scales, respectively, where 1 is “strongly disagree” and 5 is “strongly agree.” Respondents held generally positive views of providers, with mean scores of 3.75 on Provider Knowledge and 3.56 on Trust-Provider. Patients were also generally interested in stopping medicines (mean 3.42).

Participants had varied experiences related to deprescribing communication and decisions (Table 3). Fewer than 1 in 5 patients (18%) had received conflicting medication information from different providers. More than one-half (53%) recalled being told by a provider to stop a medicine, and a similar proportion (55%) reported that they had asked their doctor to stop a medicine. A little more than 1 in 3 patients (34.1%) reported having stopped a medicine.

Predictors of medication discontinuation

Based on bivariate analyses (data not presented), demographic and health status variables that were included in the multivariable model were self-reported diagnosis of anxiety, depression, or posttraumatic stress disorder (PTSD); number of prescriptions; number of nonprescription medications; number of visits to health care providers in the preceding year; age; race or ethnicity; and education. The bivariate analyses indicated that all 8 attitudinal scales were associated with the outcome, and therefore all were included in the multivariable regression analyses. None of the included variables were collinear with another variable (data not presented), although 3 attitudinal variables were correlated (PCP Knowledge and Trust-Provider: $r = 0.71$; PCP Knowledge and CollaboRATE: $r = 0.70$; Trust-Provider and CollaboRATE: $r = 0.72$). Experiential factors included as theoretically important independent predictors were seeing a VA PCP, VA specialist, and/or VA clinical pharmacist in the past year; ever receiving conflicting advice from different providers; whether a respondent had ever asked to stop a medicine; and whether the respondent had ever been told by a provider to stop a medicine.

As presented in Table 4, in a multivariable logistic regression model adjusting for patient demographics and health status, attitudes, and health care experiences (model 1a), factors associated with increased likelihood of ever discontinuing a medication were higher education, higher scores on the Interest in Stopping Medicines and CollaboRATE attitudinal scales, and reporting an experience of either being told to stop a medicine or asking to stop a medicine. Factors associated with decreased likelihood of discontinuation were taking 5 or more prescription medications, higher trust in one’s PCP, and seeing a VA clinical pharmacist in the past year. This final model was statistically significant ($P < 0.0001$), with a pseudo- R^2 of 0.31, c-statistic of 0.82, and Homer-Lemeshow statistic of 24.73 ($P = 0.0017$).

Because the phrasing of the question about stopping a medication did not allow us to rule out the possibility that some who answered “yes” were reporting a nonadherence experience rather than deprescribing, we repeated the logistic regression model in the subset of respondents ($n = 127$) who also reported that they had never tried to stop a medication without their doctor’s knowledge. It seems highly unlikely that respondents with this response pattern—that is, yes, they had stopped taking a medication but had never done so

without their doctor being aware—would include instances of simple nonadherence. This additional analysis yielded similar results for magnitude of effects, with only 2 predictors (interest in stopping medicines and seeing a VA clinical pharmacist) losing statistical significance, likely because of the smaller sample size (Table 4, model 1b).

Discussion

Despite general interest by patients for fewer medicines and by clinicians to minimize polypharmacy, many barriers prevent deprescribing from occurring as often as may be possible or desirable. In this national survey of veterans receiving 5 or more medications, we found that the strongest predictor of having discontinued a medication was provider recommendation, followed by patients requesting to stop a medication. Respondents with higher education, greater interest in deprescribing, and those who prefer shared decision making were also more likely to report discontinuation. Conversely, taking more medicines, seeing a VA clinical pharmacist, and placing greater trust in one's PCP were associated with lower likelihood of discontinuation.

There is face validity that a provider's recommendation increases discontinuation; many patients and clinicians perceive control of medications to fall within the realm of the prescriber.³¹ It also highlights the importance of patient-provider communication that should occur to determine whether continuing or discontinuing a particular medication is the best course of action for that patient.^{32,33} This observation is supported by our finding that the next greatest influence to increase discontinuation was a patient's request to stop a medicine. Although some think that the provider has primary responsibility for initiating deprescribing, patients have their own opinions about medication effectiveness and the impact of any adverse effects.^{34,35} Patient initiation of the deprescribing conversation would likely alleviate any clinician misperceptions that might hinder deprescribing, such as thinking that the patient might feel abandoned by such a suggestion.^{23,36} Patient initiation of discontinuation conversations has been shown to be an effective method of facilitating deprescribing.^{37–40} Future research should determine the best manner of providing information to patients so that they feel empowered to raise the issue of medication discontinuation with their clinical providers.

Patient attitudes also were associated with discontinuation. Higher scores on the Interest in Deprescribing scale were seen for patients reporting discontinuation, illustrating alignment between belief and action. Similarly, those preferring shared decision making were more likely to have discontinued, again highlighting the importance of patient-provider collaboration in reaching a decision that leads to actual medication discontinuation. An interest finding is that greater trust in one's PCP was associated with decreased deprescribing. Patients may depend on their clinicians' knowledge and experience, believing that clinicians always prioritize their patients' best interests and would never prescribe an unnecessary medication.^{41,42} It is possible that these patients are less likely to question their providers, but further research on the interplay of trust and deprescribing is required.

Patients with higher educational attainment were more likely to report medication discontinuation. This finding may reflect greater understanding of their medications and

associated potential harms, or it may indicate a more proactive stance and greater sense of responsibility for their own health care.⁴³ Veterans who had seen a VA clinical pharmacy specialist were less likely to report stopping a medication. Although this observation seems to be contrary to literature demonstrating pharmacists' roles in making recommendations to deprescribe,⁴⁴ it may be that patients referred to a pharmacy clinic are more complicated and have appropriate, albeit sometimes complex, medication regimens. It is also plausible that, although pharmacists are comfortable identifying potential medication changes, they may not perceive themselves as having the authority to act on those decisions, instead conveying their recommendations to the original prescriber.

An interesting finding is that patients taking more medications were less likely to recall discontinuation. This contradicts some reports in the literature suggesting that patients with polypharmacy would be targets of deprescribing interventions⁴⁵; however, our study was cross-sectional, and it is possible that respondents taking fewer medicines already had a discontinuation, while those taking more medications might yet have such an experience.

Limitations

We surveyed veterans actively using the VA health care system, and results may not generalize to non-VA settings. Specifically, VA patients may have lower or nonexistent copayments, thereby removing a financial incentive for deprescribing⁴⁶; however, this limitation does not negate the influence of the other factors on discontinuation. The scope of practice of clinical pharmacists, which allows for prescribing authority, laboratory monitoring, diagnostic testing, physical assessment, and other activities to facilitate patient care, is potentially greater within the VA system compared with pharmacists practicing in community-based settings, where the latter may be less empowered to enact deprescribing decisions, depending on the terms of their collaborative practice agreements. Despite this difference, as health care systems nationwide implement medical homes, all care team members will need to work to the top of their ability and licensure, making lessons learned within the VA system applicable elsewhere.

We were unable to assess the circumstances leading to discontinuation; it is possible that some discontinuation may reflect patient nonadherence. However, a subgroup analysis that excluded respondents reporting stopping a medication without their provider's knowledge yielded similar results, providing support for the identification of these factors as associated with discontinuation. Furthermore, the patient characteristics and attitudes we found to be associated with discontinuation, whether nonadherence or guided deprescribing, still may identify those individuals interested in stopping medication. Additional questions should address this ambiguity in future studies. Similarly, we were unable to determine etiologies for the 159 participants reporting that they had been told to stop a medicine yet did not report actually discontinuing. It is possible that further conversation led to a change in the provider's recommendation or the patient did stop it temporarily but then needed to restart (and thus the respondent did not consider it a discontinuation). Future research that monitors longitudinal medication use patterns can elucidate the relationships between provider recommendations and actual medication-taking behavior.

Because our study was cross-sectional, we cannot determine whether discontinuation experiences led to patient attitudes or vice versa. Simple correlations and collinearity diagnostics suggest that 3 attitudinal scales (PCP Knowledge, Trust-Provider, and CollaboRATE) are relatively strongly related, and therefore the actual causal relationships between these factors and self-reported medication discontinuation may not be exactly as found in the present study. Furthermore, we recommend that all 3 factors should be taken into account in future research or intervention designs. Similarly, although the Hosmer-Lemeshow statistic associated with the logistic regression was statistically significant, suggesting poor model fit, the preponderance of evidence, including both the pseudo- R^2 and the c-statistic, indicated adequacy of the model. Furthermore, several shortcomings of the Hosmer-Lemeshow measure have been noted, including low power.⁴⁷ Nonetheless, future research to replicate the present findings is recommended. As with all surveys, there could be social desirability or recall biases, but the psychometric assessment of the PPoD conducted during its development suggests that noise from those or other sources does not overwhelm the attitudinal signal represented by the scales.²⁵ Future work could compare survey responses to health record data and prescriber recall, especially given that many providers report frequent discontinuation. Others have demonstrated disparities between patient and provider perceptions for other clinical decision making; addressing discrepant perceptions of medication discontinuation may foster more appropriate medication use.³²

Conclusion

Efforts to reduce polypharmacy and inappropriate medication use are often hindered by patient-, provider-, and system-level barriers. Approaching deprescribing as a patient-centered activity should incorporate patient perspectives about their medication use, health care overall, and interest in participating in medical decision making. By doing so, interactions with clinicians may build therapeutic alliances in a shared vision of providing patients with beneficial care while limiting potentially unnecessary therapeutics.⁴⁸ Understanding which patient characteristics and attitudes facilitate deprescribing, such as explicit interest in reducing medications, may lead to targeted interventions. For example, some patients may need to be explicitly prompted to address medication-related concerns with their providers. Other patients may not be as interested in such conversations, and for them, an intervention promoting provider-initiated deprescribing discussions may be more effective. The present study suggests that patients with interest in deprescribing and in participating in shared decision making may be more receptive to discontinuation discussions. Future research should evaluate the best way to incorporate this survey and its findings into clinical workflow to augment identification of and capitalization on opportunities for deprescribing. These efforts may include the design and evaluation of clinical decision-support interventions to identify patients likely amendable to discontinuation, suggested scripts for providers to approach the issue with patients, or reminders to review medication regimens for potential deprescribing. These interventions should promote safe, appropriate, and rational use of medications.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Key Points

Background:

- Polypharmacy is associated with adverse drug events.
- Deprescribing, or proactive, intentional discontinuation of medications, may reduce polypharmacy.

Findings:

- The strongest predictors of patient-reported medication discontinuation were provider recommendations or requests to discontinue medication, highlighting the importance of communication.
- Additional patient factors associated with discontinuation included interest in deprescribing and shared decision making, suggesting that such patients may be more amenable to recommendations to stop medications.

Table 1

Self-reported respondent demographics and health status

Respondent characteristic (n = 803)	n (%)
Self-reported health status	
Poor	123 (15.6)
Fair	354 (44.8)
Good	245 (31.0)
Very good	61 (7.7)
Excellent	7 (0.9)
Missing	13 (1.6)
Self-reported presence of medical diagnoses ^a	
Anxiety	283 (35.2)
Arthritis	476 (59.3)
Cancer	160 (19.9)
Chronic lung disease	226 (28.1)
Depression	349 (43.5)
Diabetes	422 (52.6)
Heart failure	166 (20.7)
Hypertension	585 (72.9)
Ischemic heart disease	250 (31.1)
Posttraumatic stress disorder	264 (32.9)
Stroke	89 (11.1)
Other	156 (19.4)
Number of prescription medications	
0	2 (0.26)
1–4	48 (6.2)
5–8	293 (37.7)
9–12	273 (35.1)
13	162 (20.8)
Missing	25 (3.1)
Number of nonprescription medications	
0	227 (28.9)
1–4	478 (60.8)
5–8	65 (8.3)
9–12	10 (1.3)
13	6 (0.76)
Missing	17 (2.1)
Number of health care provider visits in preceding year	
1–4	230 (29.0)
5–8	224 (28.3)
9–12	123 (15.5)
13	215 (27.2)

Respondent characteristic (n = 803)	n (%)
Admitted to hospital in preceding year	282 (35.6)
Admitted to a nursing home, long-term care facility, or rehabilitation facility in the preceding year	32 (4.1)
Friend or family-member assistance with medications ^a	
Make decisions about which medicines to take	79 (10.1)
Help manage medicines	175 (22.4)
Help with taking medicines	91 (11.6)
None of the above	560 (71.5)
Age, y	
55	106 (13.2)
56–65	187 (23.3)
66–75	334 (41.6)
76	151 (18.8)
Missing	25 (3.1)
Male sex	659 (85.4)
Race or ethnicity	
Non-Hispanic white	548 (68.2)
Non-Hispanic black	134 (16.7)
Other	97 (12.1)
Missing	24 (3.0)
Marital status	
Single, divorced, or widowed	285 (35.5)
In a relationship, married, or civil union	499 (62.2)
Missing	19 (2.4)
Educational level	
High school or less	367 (45.7)
Some college or more	414 (51.6)
Missing	22 (2.7)

^aMore than 1 response option may be selected.

Table 2

Respondent attitudes toward medication and health care experiences

Scale	n	Mean (SD) ^a
Medication Concerns	792	3.01 (0.85)
Provider Knowledge	799	3.75 (0.82)
Interest in Stopping Medicines	801	3.42 (0.84)
Patient Involvement in Decision Making	799	3.25 (0.79)
Unimportance of Medicines	802	2.39 (0.75)
Beliefs About Medication Questionnaire-Overuse	798	2.91 (0.75)
Trust-Provider	801	3.56 (0.57)
CollaboRATE	786	3.73 (0.99)

^aPossible range of scores for all scales: 1–5, where 1 = “strongly disagree” and 5 = “strongly agree,” with a neutral midpoint. For CollaboRATE, 1 = “no effort” to 5 = “every effort.”

Table 3

Respondent health care experiences

Respondent experience	n (%)
Has PCP in the community (i.e., non-VA PCP)	194 (28.3)
Saw VA PCP in past 12 months	662 (97.1)
Saw VA specialist in past 12 months	530 (79.9)
Saw VA clinical pharmacist in past 12 months	238 (36.4)
Had prescription medicines filled at a pharmacy outside of the VA during past 12 months	
None	491 (71.9)
Some or all	192 (28.1)
Missing	20 (2.5)
Ever had one provider say one thing about a medicine and another provider say something different about that medicine	125 (18.3)
Ever had provider recommend medication discontinuation	
No	231 (35.0)
Not sure or can't remember	77 (11.7)
Yes	353 (53.4)
Missing	64 (8.0)
Ever asked provider to discontinue medication	383 (55.0)

Abbreviations used: PCP, primary care provider; VA, Veterans Affairs.

Table 4

Multivariable regression models to identify factors associated with self-reported medication discontinuation, odds ratio (95% CI)

Variable	Model 1a (n = 550)	Model 1b (n = 127)
Anxiety	0.98 (0.55–1.7)	0.96 (0.48–2.0)
Depression	0.94 (0.53–1.7)	0.78 (0.38–1.6)
Posttraumatic stress disorder	0.85 (0.49–1.5)	1.0 (0.51–2.0)
Number of prescription medications		
0–4 (ref.)	–	–
5–8	0.13 (0.05–0.36)*	0.11 (0.03–0.38)*
9–12	0.12 (0.04–0.35)*	0.11 (0.03–0.37)*
13	0.18 (0.06–0.52)*	0.13 (0.03–0.47)*
Number of nonprescription medications		
0 (ref.)	–	–
1–4	1.4 (0.84–2.2)	1.2 (0.65–2.3)
5–8	1.8 (0.78–4.0)	1.6 (0.57–4.5)
9–12	0.29 (0.01–11.8)	<0.001 (<0.001 to >999)
13	1.3 (0.01–391.6)	<0.001 (<0.001 to >999)
Number of health care provider visits in preceding year		
1–4 (ref.)	–	–
5–8	1.2 (0.65–2.1)	0.88 (0.42–1.8)
9–12	1.8 (0.89–3.5)	1.26 (0.54–3.0)
13	0.89 (0.47–1.7)	0.71 (0.32–1.6)
Age, y		
55 (ref.)	–	–
56–65	0.41 (0.19–0.9)	0.59 (0.23–1.6)
66–75	0.42 (0.2–0.9)	0.59 (0.22–1.6)
76	0.45 (0.19–1.1)	1.01 (0.33–3.1)
Male sex	0.63 (0.33–1.2)	0.63 (0.28–1.5)
Educational level		
High school or less (ref.)	–	–
Some college or more	1.8 (1.2–2.8)*	2.0 (1.1–3.6)*

Variable	Model 1a (n = 550)	Model 1b (n = 127)
Medication Concerns	1.2 (0.83–1.7)	1.1 (0.70–1.7)
Provider Knowledge ^a	0.83 (0.56–1.2)	0.84 (0.49–1.4)
Interest in Stopping Medicines ^b	1.4 (1.0–2.0)	1.3 (0.83–1.9)
Patient Involvement in Decision Making ^a	0.93 (0.69–1.3)	0.94 (0.64–1.4)
Unimportance of Medicines	0.89 (0.60–1.3)	0.86 (0.51–1.4)
Beliefs About Medication Questionnaire-Overuse ^a	0.89 (0.61–1.3)	0.76 (0.48–1.2)
Trust-Provider ^a	0.29 (0.15–0.55) [*]	0.35 (0.15–0.80) [*]
CollaboRATE ^a	1.6 (1.1–2.2) [*]	1.6 (1.1–2.5) [*]
Saw VA PCP in past 12 months	0.88 (0.19–4.0)	1.0 (0.11–9.6)
Saw VA specialist in past 12 months	1.5 (0.81–2.7)	1.1 (0.55–2.4)
Saw VA clinical pharmacist in past 12 months ^b	0.63 (0.4–1.0)	0.59 (0.32–1.1)
Ever had one provider say one thing about a medicine and another provider say something different about that medicine	1.3 (0.74–2.3)	1.0 (0.49–2.1)
Ever had provider recommend discontinuation		
No (ref.)	–	–
Not sure or can't remember	1.8 (0.85–3.9)	1.645 (0.53–5.1)
Yes	5.2 (3.0–9.1) [*]	10.4 (4.7–22.7) [*]
Ever asked provider to discontinue medication	3.0 (1.9–4.8) [*]	2.3 (1.3–4.0) [*]

Model 1a includes all respondents with answers to all items included in the final model. Model 1b includes only the subset of respondents who also reported that they had never tried to stop a medication without their doctor's knowledge.

Abbreviations used as in Table 3.

^aProvider Knowledge assesses confidence in the PCP's medical acumen; Patient Involvement in Decision Making evaluates interest in participating in decisions about medication use; Beliefs About Medication Questionnaire-Overuse addresses perceptions that medicines are too often prescribed; Trust-Provider reflects the level of trust that the PCP will act in the patient's best interest; CollaboRATE measures the respondent's interest in shared decision making for medical care in general. Possible range of scores for all scales: 1–5, where 1 = “strongly disagree” and 5 = “strongly agree,” with a neutral midpoint. For CollaboRATE, 1 = “no effort” to 5 = “every effort.”

^bVariables that were significant in full sample model but not statistically significant in subsample model.

^{*} Statistically significant findings.