

Can stories influence African-American patients' intentions to change hypertension management behaviors? A randomized control trial.

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Abstract (200 words)

Objectives: Information-only interventions for hypertension management have limited effectiveness, particularly among disadvantaged populations. We assessed the impact of viewing African-American patients' stories of successfully controlling hypertension on intention to change hypertension management behaviors and engagement with educational materials.

Methods: In a three-site randomized trial, 618 African-American Veterans with uncontrolled hypertension viewed an information-only DVD about hypertension (control) or a DVD adding videos of African-American Veterans telling stories about successful hypertension management (intervention). After viewing, patients were asked about their engagement with the DVD, and their intentions to change behavior. Mean scores were compared with two-sided t-tests.

Results: Results favored the Stories intervention, with significantly higher emotional engagement versus control (4.3 vs. 2.2 $p < 0.0001$). Intervention patients reported significantly greater intentions to become more physically active (4.6 vs. 4.4, $p = 0.018$), use salt substitutes (3.9 vs. 3.4, $p = 0.006$), talk openly with their doctor about hypertension (4.6 vs. 4.5, $p = 0.049$), and remember to take hypertension medication (4.8 vs. 4.6, $p = 0.04$).

Conclusion: Patients were more emotionally engaged and reported intentions to change behavior when watching real patient hypertension management success stories.

Practice Implications. Stories may be more influential than information alone, and represent a scalable approach to modifying behavioral intention.

Introduction:

Uncontrolled hypertension remains an important health concern for patients throughout the US, affecting over 50 million Americans, or more than 29% of the adult population.^{1,2} As blood pressure (BP) increases, the greater the risk for adverse outcomes including the development of coronary artery disease, congestive heart failure, and stroke. While effective treatment of hypertension has been clearly shown to reduce these risks,^{3,4} studies have persistently shown that only about half of patients with established hypertension have their BP under control,^{5,6,7} and a disproportionate number of patients with poorly controlled BP are minorities, particularly African-Americans.^{1,6,8}

Hypertension self-management through diet, exercise and medication adherence can lead to good BP control and minimize adverse effects. Many educational behavioral interventions have been developed to address hypertension control and some have focused on minority populations⁹. Most often these interventions involve didactic teaching from providers, or cost intensive frequent contacts between patients and medical professionals, such as nurses or health coaches. Few of these interventions have demonstrated substantial success in controlling BP¹⁰, and these interventions may be even less effective in minority populations¹¹. One reason for the relative ineffectiveness of these interventions may be a problem with the ways in which information about how to best control one's hypertension is communicated. Establishing culturally appropriate communication is difficult, and communicating complex health information to patients with limited health literacy may be even more challenging.

One novel approach to communicating health information is to use narrative communication strategies. Narrative communication is broadly defined as "any representation of a sequence of connected events and characters that has an identifiable structure, is bounded in space and time, and contains implicit or explicit messages about the topic addressed."^{12,13} Narrative appeals to the innate human affinity for stories and through stories we make meaning of our lives.^{12,14} Narrative theory argues that stories

change attitudes and behaviors by breaking down cognitive resistance because they capitalize on commonly used ways of interacting, increase personal relevance and may reduce counter-arguing¹⁵⁻¹⁸. This occurs through two mechanisms: transportation and identification. Audiences become more engaged in the material as they find themselves transported or absorbed into the world of the storyteller, and identify with or see themselves as similar to the storytellers¹⁹. Subsequently the audience becomes emotionally and cognitively engaged in the narrative content and may be more open and accepting of the information presented.

Narratives may be even more effective for particular populations. For example, storytelling is a central aspect of African-American culture,²⁰ and other studies have shown that African-Americans respond favorably to stories about health^{21,22}. Moreover, stories may be more easily understood by those with lower literacy whose poorer BP control may in part be due to difficulty with reading or understanding complex terminology typically used by clinicians²³.

In prior work, we showed that African-American patients' stories were effective in improving BP outcomes in comparison to an attention control²⁴. The question arises whether patient stories have a beneficial effect on patients when compared to similar information presented didactically and how the stories impact patients' behavior. The current paper reports on one aspect of this study – how the stories, compared to similar content presented didactically, affected patients' intentions to change hypertension management behaviors and engagement with the educational content.

Methods

We conducted a three-site, two-armed randomized clinical trial. We compared: 1) a DVD with didactic information about controlling your hypertension, with 2) a DVD that also included edited videotaped stories of African-American patients telling their success stories about controlling their BP. The broader study examines the impact of the intervention on blood pressure and behaviors at six-month follow-up.

We report here the immediate effect of the intervention on behavioral intentions. The study was approved by the US Department of Veterans Affairs Central IRB.

The Intervention

We created two different types of DVDs. The control DVD was a simple, content-specific DVD, using PowerPoint slides, photographs and a voice-over. We presented educational information about how to control your BP with segments on talking to your doctor, smoking and alcohol, taking medications, stress, diet and exercise, and talking with family and friends. We included content based on materials regarding good hypertension management behaviors from the National Heart, Lung, and Blood Institute, the American Heart Association; and the Centers for Disease Control and Prevention.²⁵⁻²⁷ We downloaded free online pictures from Getty Images of African-Americans engaging in hypertension management behaviors associated with each of these content areas. The voice-over that was done by female African-American Veteran reciting a script describing the positive behavior and why it was important for managing hypertension.

Each stories intervention DVD also contained five stories from African-American Veterans who had success in controlling their hypertension. The patient stories were collected at three Veterans Affairs Medical Centers and were edited to represent behaviors and theoretical constructs previously identified as important for good hypertension control²⁸. The development of the DVD is reported elsewhere²⁹. Notably, we asked three African-American patients to join the study team and view the raw video to help identify which storytelling patients and which stories were most engaging, resonated with them and they believed would be most influential with other African-American patients with hypertension. Each story we included in the DVD began with the Veteran introducing him/herself and telling a story of when he/she first realized that hypertension was a problem. We then selected stories that corresponded to the content presented in the control DVD; including stories about talking to your

doctor, smoking and alcohol, taking medications, stress, eating a healthy diet (including decreasing salt) & and getting exercise. Many of the stories also incorporated talking with friends and family about hypertension. The main page of the intervention DVD had photos of five patients whose stories could be selected in any order by clicking on the photo and a link saying "Learn More" which led to the exact didactic content of the control DVD.

Participants: We recruited African-American patients with uncontrolled hypertension in primary care clinics at three US Department of Veterans Affairs (VA) Medical Centers (Southeast, Midwest and Mid-Atlantic) that had large African-American patient populations. Patients were eligible to participate if they self-identified as black or African-American, had documented hypertension and at least 1 uncontrolled BP (SBP \geq 140 mmHg for non-diabetics and SBP \geq 130 for diabetics) in the past 12 months. Eligible participants were sent a letter inviting participation, followed by a research assistant (RA) phone call. Those who agreed to participate underwent a brief screening to confirm self-identified race as black or African-American, awareness of hypertension diagnosis and medication usage for hypertension.

Procedures: Patients provided written informed consent for the study. Patients met with the RA in person and were randomized to receive either the didactic only DVD (control) or the DVD that included patients' stories (intervention). The RA took three BP readings and an average of all three readings was recorded as the baseline BP. Patients completed a baseline questionnaire, then viewed the DVD with the RA in the clinic, watching as much of the DVD as they liked. They were then asked to complete a brief questionnaire immediately post-viewing the DVD.

Measures: The baseline questionnaire included questions about patients' demographics, current hypertension management behaviors, smoking, alcohol, exercise, beliefs about medications³⁰, self-efficacy for managing hypertension³¹, and medication adherence³². Patients were also asked to

complete the Short Test of Functional Health Literacy Assessment in Adults, a brief validated measure of health literacy³³.

The post DVD questionnaire included two outcome measures related to engagement with the DVD content, and then perceived influence on intentions to change behaviors. The first scale asked about “transportation” (the extent to which the patient was absorbed in the content), using a validated 5-item measure of intellectual and emotional engagement with the DVD and attentional focus³⁴. The measure asks patients to rate the extent to which they were mentally involved with the DVD, they were distracted from the DVD while watching, the DVD affected them emotionally and the relevance of the DVD to their everyday lives. The second measure assessed the influence of the DVD on patients’ intention to change 28 behaviors related to BP control with the stem: “How much did the DVD influence you to try to....” (See Table 2), rated on a scale of 1-5 (not at all to very much)

Analysis: We conducted two sided t-tests to compare mean scores for the intervention and control groups on all measures. As prior work has noted a differentially greater effect of patient vignettes on those with lower health literacy³⁵, we then completed the same analyses stratified by levels of health literacy (Adequate vs. marginal and inadequate).

Results

We enrolled and randomized 618 Veterans, 308 in the intervention group and 310 in the control group. Participants were primarily male, greater than 50 years old, mostly with high school education or greater. 53% earned less than \$20,000 per year and 22% reported unstable housing. Almost 40% had inadequate or marginal health literacy. Despite recruitment based on uncontrolled hypertension, 65% thought their BP was under control. Forty seven percent had comorbid diabetes. There were no significant differences between the intervention and control groups on baseline characteristics (Table 1).

The results of the patient engagement (transportation) scale favored the intervention. Patients who viewed the stories intervention DVD were significantly more likely to report that the DVD engaged them emotionally (4.3 vs. 3.2 $p < 0.001$) than those who viewed the control DVD. There were no significant differences overall in intellectual engagement (Table 2). When stratified by literacy level, those with inadequate or marginal literacy reported greater emotional and mental engagement with the intervention, compared with the control (6.7 vs. 6.2 $p < .007$). In those with adequate literacy, emotional engagement was sustained, but mental engagement was no longer significant and did not favor the intervention. In contrast, patients with adequate health literacy reported finding their minds wandering more when watching the stories DVD (1.7 vs 1.4: $p = 0.04$) (Table 3).

The stories intervention DVD influenced patients' intention to change several behaviors. Patients who viewed the stories intervention DVD reported significantly greater intention to change four of the twenty-eight behaviors than those who viewed the control DVD (Table 4). These were intention to 1) use salt substitutes (3.9 vs. 3.4, $p = 0.0006$); 2) start to become more physically active (4.6 vs. 4.4, $p = 0.02$); 3) remember to take their BP medication (4.8 vs. 4.6, $p = 0.04$); and 4) talk openly with their doctor about high BP (4.6 vs. 4.5, $p = 0.05$). We also found trending, but non-significant differences in intention to stay on BP medication (4.8 vs. 4.7, $p = 0.07$) and to ask the doctor questions about high BP (4.6 vs. 4.4, $p = 0.08$). After stratifying by literacy, the main influences of the intervention were seen in those with inadequate/marginal literacy (Table 5). Only one of 28 items, use salt substitutes, significantly favored the intervention among both literacy groups. In addition, we found a significant effect of the intervention among those with inadequate/marginal literacy on patients' intention to express concerns to their doctor about their BP (4.7 vs. 4.5, $p = 0.05$).

Discussion & Conclusion

Discussion

Our study demonstrated that videotaped patient stories can be an effective way to communicate with patients, influencing patients' intention to change important behaviors affecting BP control. We found that real patient stories are emotionally engaging for African-American patients, especially in comparison to information provided didactically. Consistent with narrative communication theory, it may be this engagement with the material that leads to the effectiveness of stories in interventions.

We focused on African-American patients as this population has particularly worse hypertension control. Despite literature unveiling of the root causes of such disparities, interventions have not had much impact on African-American patients³⁶. In the African-American community, oral traditions are strong and therefore stories may be even more central to communication ^{20,37}. Using patient stories in this and other disadvantaged populations may be important to better address disparities in healthcare outcomes.

We found also that the stories intervention was particularly effective with patients with lower health literacy. Low literacy has been found to be a significant factor in patients' health management ^{38,39} and development of educational materials that are designed for low literacy is important. Those with lower health literacy may have found the material more easily understood when presented as stories by their peers. Health literacy appeared to mediate the effect of the DVD on engagement. While patients with lower health literacy were more mentally involved with the stories, patients with adequate health literacy appeared to be less engaged mentally. It may be that those with higher health literacy found the didactic content more interesting overall.

Our findings reflect other recent efforts to use patient stories to improve chronic illness management and outcomes. Stories have been successful in improving a wide range of health outcomes¹⁹, including improving diabetes management⁴⁰, hypertension control²⁴, promoting physical activity after breast cancer⁴¹ and preventive medicine such as vaccination completion⁴². Our findings also demonstrate that stories may affect patients' intentions to change health behaviors. Others have found similar effects of stories on about intentions to stop smoking⁴³.

Our findings are also consistent with several aspects of social cognitive theory (SCT). SCT argues that individual behavior is inherently situated in social interactions and that people change behavior based on watching others. This observational learning or vicarious experience means that watching individuals complete tasks or tell the story of their own mastery and successful strategies can enhance one's own self-efficacy.⁴⁴ People are more likely to replicate a modeled behavior if they believe it will result in valued outcomes.⁴⁵ Participants in our study were transported to some extent into the stories being told. Hearing the stories of patients like themselves who had success in changing their own behaviors and improving their BP influenced them to try to change some important behaviors.

The stories intervention may also tap into the effect of social support and peer interventions. Social support has been found to be important for improving self-management in a wide range of chronic illnesses. Recent literature indicates the effectiveness of peers on managing chronic illnesses such as diabetes⁴⁶. For example, Long et al found that using peer mentors was effective in improving diabetes outcomes in a cohort of African-American patients with poorly controlled diabetes⁴⁷. Whittle et. al. found that a peer-led educational group was equivalently effective as professionally led didactic seminars in improving hypertension control⁴⁸. Notably, however, the content of the peer led group used presentations, scripts, and educational materials that were similar to the didactic presentations in the

professionally led group. One of the ways in which peers may affect illness self-management may be through the sharing of their own stories, difficulties and successes that are central to the narrative communication approach in our study.

There are some limitations of this study. This analysis reports only on patients' intentions to change their behavior which may not result in actual behavior change. Although our findings are statistically significant, the question remains regarding the clinical significance of the intervention. Analyses of actual behavior change or longer term hypertension control will be reported once the study is completed and are important to understanding the full effect of patient stories on clinical outcomes. The study was done with only African-American veterans, most of whom were men; therefore, the generalizability to women or non-veterans may be limited. The geographic diversity of our sample, however, may enhance the generalizability to African-Americans throughout the country.

Conclusion

Studies have shown that patients' explanatory models (how they understand the condition) and daily lived experience influence patients' hypertension management.⁴⁹⁻⁵¹ Both are tied closely to their interactions with providers, but may be even more influenced by their experiences with hypertension in themselves, other family members and their communities.^{50,52} Communicating with patients about how they can effectively manage their BP is critical to attaining better hypertension management and outcomes. Using narrative communication in which patients can readily share their stories about how they successfully manage their illnesses may tap into beliefs and daily lived experience in ways that typical educational interventions may not, particularly when working with patients with lower health literacy or communities which, like the African-American community, have strong narrative traditions.

Practice Implications

Tapping into the natural tendencies of humans to listen to and engage with stories of their peers may be a truly effective way to help patients understand and manage their illnesses. Yet many peer based interventions are complex and resource intensive. The stories intervention, on the other hand, is scalable and can be used readily in the clinical setting. Sharing patient stories using DVDs in the clinic setting or by providing such stories via an internet link may engage patients in their hypertension management.

We found that patients reported being more likely to talk to their doctors after viewing the stories. As others have found, the stories may prime patients to talk with their providers about their hypertension⁵³. Patients often have difficulty raising issues surrounding chronic illness management with their providers. Our finding that patients with lower health literacy reported more likelihood of talking to their doctors about concerns points towards the importance of using this strategy for this population. Giving them others' stories about hypertension concerns and behaviors may provide an excellent jumping off point for discussing their concerns about hypertension and difficulties they may have engaging in healthy behaviors and taking their medications. If providers are aware of the DVD stories, they may further be able to utilize them to facilitate more patient-centered communication, focusing on patients' beliefs and experiences through talking about the stories. Tapping into the natural tendencies of humans to listen to and engage with stories may be a truly effective way to help patients understand and manage their illnesses.

Table 1: Patient Characteristics in intervention and control groups

	N=618	Intervention N=308	Control N=310	P-Value
Sex (n=614)		% (N)	% (N)	
Male		91.5 (n=280)	91.9 (n=283)	0.8646
Female		8.6 (n=26)	8.1 (n=25)	
Age (n=617)				
<50		9.5 (n=29)	8.1 (n=25)	0.7846
50-65		52.4 (n=161)	51.9 (n=161)	
65+		38.1 (n=117)	40.0 (n=124)	
Do you think your BP is under control? (n=504)				
No		34.2 (n=88)	37.3 (n=92)	0.4814
Do you have access to DVD Player? (n=562)				
Yes		93.9 (n=261)	92.6 (n=263)	0.5459
During the past two months, I worried about my housing. (n=616)				
Always/Frequently		21.9 (n=67)	22.9 (n=71)	0.7268
Sometimes/Rarely		18.3 (n=56)	20.3 (n=63)	
Never		59.8 (n=183)	56.8 (n=176)	
Diabetes (n=614)				
Yes		45.0 (n=138)	48.2 (n=148)	0.4185
Education (n=610)				
<High School		7.3 (n=22)	10.4 (n=32)	0.1543
High School Grad/Some College or Tech School		80.2 (n=243)	80.8 (n=248)	
College Grad/Post Grad		12.5 (n=38)	8.8 (n=27)	
Income (n=565)				
\$15,000 or less		36.0 (n=102)	40.4 (n=114)	0.6011
\$15,000 – \$20,000		17.3 (n=49)	13.8 (n=39)	
\$20,001 – \$40,000		25.8 (n=73)	24.8 (n=70)	
\$40,001 or more		20.9 (n=59)	20.9 (n=59)	
Health Literacy Score				
Inadequate		25.7	25.5	0.6050
Marginal		15.3	12.6	
Adequate		59.1	61.9	

Table 2: Transportation - Measurement of emotional and intellectual engagement; response set 1-7 from not at all to very much.

	I Mean (SD)	C Mean (SD)	P-value
While I was watching the DVD, activity going on in the room around me was on my mind.	1.5 (1.5)	1.4 (1.3)	0.2034
I was mentally involved in the DVD while watching it.	6.6 (0.9)	6.5 (1.3)	0.1041
The DVD affected me emotionally.	4.3 (2.3)	3.2 (2.2)	<0.0001
I found my mind wandering while watching the DVD.	1.7 (1.5)	1.6 (1.5)	0.3487
The events in the DVD are relevant to my everyday life.	6.1 (1.6)	6.3 (1.4)	0.0782

Table 3: Effect of health literacy on transportation:
Measured on a scale of 1-7, from not at all to very much

	Inadequate and Marginal Literacy			Adequate Literacy		
	I Mean (SD)	C Mean (SD)	P	I Mean (SD)	C Mean (SD)	P
While I was watching the DVD, activity going on in the room around me was on my mind.	1.8 (1.8)	1.5 (1.5)	0.2981	1.4 (1.3)	1.3 (1.1)	0.5365
I was mentally involved in the DVD while watching it.	6.7 (0.9)	6.2 (1.6)	0.0067	6.6 (0.9)	6.7 (0.9)	0.5088
The DVD affected me emotionally.	4.2 (2.4)	3.3 (2.4)	0.0026	4.4 (2.1)	3.1 (2.2)	<.0001
I found my mind wandering while watching the DVD.	1.7 (1.6)	1.9 (1.8)	0.4285	1.7 (1.4)	1.4 (1.2)	0.0374
The events in the DVD are relevant to my everyday life.	6.0 (1.9)	6.1 (1.6)	0.4064	6.2 (1.5)	6.4 (1.2)	0.1092

Table 4: Influence of the DVD to change behavior How much did the DVD influence you to try to...
Response set: 1-5 from not at all to very much

Influenced Scale: (Q: P19-P46)*	I Mean (SD)	C Mean (SD)	P-value
Reduce Your stress	4.0 (1.3)	4.1 (1.2)	0.3811
Get the support you need from others to control your high BP	4.1 (1.3)	4.0 (1.3)	0.7469
Cut down or stop smoking	3.0 (1.9)	3.1 (1.9)	0.6785
Use salt substitutes	3.9 (1.5)	3.4 (1.6)	0.0006
Increase fruits and vegetables	4.3 (1.2)	4.5 (1.0)	0.1278
Fry with a different type of oil	3.8 (1.5)	3.9 (1.4)	0.1961
Cut down on salt	4.3 (1.3)	4.3 (1.2)	0.4783
Cut down on fried foods	4.0 (1.3)	4.0 (1.3)	0.5176
Cut down on cholesterol	3.9 (1.4)	4.0 (1.2)	0.5195
Cut down on pork	3.5 (1.6)	3.5 (1.6)	0.7594
Steam vegetables instead of frying	4.1 (1.3)	4.2 (1.3)	0.8001
Bake foods instead of frying them	4.3 (1.17)	4.3 (1.15)	0.8723
Go to the library to learn more about high BP	3.0 (1.6)	2.8 (1.5)	0.1077
Use the internet to learn more about high BP	3.3 (1.7)	3.1 (1.6)	0.1446
Learn more about high BP	4.5 (0.9)	4.5 (1.0)	0.3235
Find out more about your family history of high BP	4.0 (1.4)	3.9 (1.4)	0.5255
Pick up information in the doctor's office about high BP	4.2 (1.1)	4.1 (1.2)	0.6186
Start to be more physically active	4.6 (1.0)	4.4 (1.0)	0.0184
Start or continue to walk for exercise	4.4 (1.1)	4.4 (1.1)	0.7485
Lose weight	4.0 (1.5)	3.9 (1.4)	0.7853
Remember to take your BP medication	4.8 (0.7)	4.6 (0.9)	0.0395
Stay on your BP medication	4.8 (0.7)	4.7 (0.9)	0.0669
Talk openly with your doctor about high BP	4.6 (0.9)	4.5 (1.0)	0.0490
Ask your doctor questions about high BP	4.6 (0.9)	4.4 (1.1)	0.0788
Go to the doctor for a high BP check-up	4.5 (1.1)	4.4 (1.1)	0.1213
Follow your doctors instructions for high BP control	4.8 (0.7)	4.7 (0.8)	0.1876
Express concerns to your doctor about your high BP	4.6 (0.9)	4.5 (1.0)	0.1895
Be prepared for your doctor visit	4.5 (1.0)	4.5 (1.0)	0.7794

Table 5: Effect of health literacy on influence of the DVD to change behavior

Influenced Scale: (Q: P19-P46)*	Inadequate and Marginal Literacy			Adequate Literacy		
	I Mean (SD)	C Mean (SD)	P-value	I Mean (SD)	C Mean (SD)	P-value
Reduce Your stress	4.0 (1.3)	4.1 (1.3)	0.4224	4.0 (1.3)	4.0 (1.1)	0.6411
Get the support you need from others to control your high BP	4.3 (1.2)	4.2 (1.2)	0.6583	3.9 (1.3)	4.0 (1.3)	0.9817
Cut down or stop smoking	2.7 (1.9)	3.0 (1.9)	0.3385	3.2 (1.9)	3.1 (1.9)	0.7286
Use salt substitutes	3.8 (1.6)	3.3 (1.7)	0.0345	3.9 (1.4)	3.5 (1.5)	0.0054
Increase fruits and vegetables	4.5 (1.0)	4.5 (1.0)	0.9078	4.2 (1.2)	4.5 (1.0)	0.0673
Fry with a different type of oil	3.8 (1.5)	3.9 (1.5)	0.5404	3.7 (1.5)	3.9 (1.4)	0.2370
Cut down on salt	4.3 (1.3)	4.1 (1.4)	0.1403	4.3 (1.2)	4.4 (1.1)	0.7071
Cut down on fried foods	3.9 (1.5)	4.0 (1.4)	0.8364	4.0 (1.3)	4.1 (1.2)	0.5014
Cut down on cholesterol	4.0 (1.4)	3.9 (1.3)	0.5961	3.9 (1.4)	4.1 (1.2)	0.1993
Cut down on pork	3.5 (1.7)	3.3 (1.7)	0.3252	3.5 (1.6)	3.5 (1.5)	0.6575
Steam vegetables instead of frying	4.1 (1.4)	4.3 (1.3)	0.1799	4.2 (1.3)	4.1 (1.3)	0.4583
Bake foods instead of frying them	4.4 (1.1)	4.3 (1.2)	0.2753	4.2 (1.2)	4.3 (1.1)	0.4849
Go to the library to learn more about high BP	3.0 (1.7)	2.7 (1.6)	0.0911	2.9 (1.5)	2.8 (1.5)	0.5209
Use the internet to learn more about high BP	3.1 (1.8)	2.8 (1.7)	0.2246	3.4 (1.5)	3.3 (1.6)	0.3178
Learn more about high BP	4.7 (0.8)	4.5 (1.1)	0.2279	4.5 (0.9)	4.4 (1.0)	0.8355
Find out more about your family history of high BP	4.0 (1.4)	4.0 (1.4)	0.9935	4.0 (1.4)	3.9 (1.4)	0.4276
Pick up information in the doctor's office about high BP	4.4 (1.0)	4.2 (1.2)	0.0736	4.0 (1.2)	4.1 (1.2)	0.4357
Start to be more physically active	4.6 (0.9)	4.4 (1.1)	0.0579	4.5 (1.0)	4.4 (1.0)	0.1514
Start or continue to walk for exercise	4.5 (1.0)	4.3 (1.1)	0.3005	4.3 (1.2)	4.4 (1.0)	0.6714
Lose weight	3.9 (1.5)	3.8 (1.5)	0.5855	4.0 (1.4)	4.0 (1.4)	0.9381
Remember to take your BP medication	4.8 (0.6)	4.5 (1.0)	0.0100	4.7 (0.7)	4.7 (0.8)	0.6710
Stay on your BP medication	4.8 (0.6)	4.6 (0.9)	0.0617	4.8 (0.7)	4.7 (0.8)	0.4131
Talk openly with your doctor about high BP	4.7 (0.8)	4.5 (1.0)	0.0389	4.6 (0.9)	4.5 (1.1)	0.3898
Ask your doctor questions about high BP	4.6 (0.9)	4.5 (1.1)	0.2018	4.5 (1.0)	4.4 (1.0)	0.2389
Go to the doctor for a high BP check-up	4.6 (1.0)	4.5 (1.0)	0.1401	4.4 (1.1)	4.4 (1.1)	0.4429
Follow your doctors instructions for high BP control	4.8 (0.6)	4.7 (0.9)	0.1535	4.7 (0.7)	4.7 (0.8)	0.6291
Express concerns to your doctor about your high BP	4.7 (0.8)	4.5 (1.1)	0.0501	4.5 (1.0)	4.5 (1.0)	0.9312
Be prepared for your doctor visit	4.6 (1.0)	4.6 (1.0)	0.6948	4.4 (1.1)	4.5 (1.0)	0.4788

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References

1. Hazzar I, Kotchen TA. Trends in Prevalence, Awareness, Treatment, and Control of Hypertension in the United States, 1988-2000. *Jama* 2003;290:199-206.
2. Chobanian AV, Bakris GL, Black HR, et al. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. *Jama* 2003;289:2560-72.
3. Amery A, Birkenhager W, Brixko P, et al. Mortality and morbidity results from the European Working Party on High Blood Pressure in the Elderly Trial. *Lancet* 1985;1:1349-54.
4. SHEP Cooperative Research Group. Prevention of stroke by antihypertensive drug treatment in older persons with isolated systolic hypertension: final results of the Systolic Hypertension in the Elderly Program (SHEP). *JAMA* 1991;265:3255-64.
5. Jamerson K, DeQuattro V. The impact of ethnicity on response to antihypertensive therapy. *Am J Med* 1996;101:22S-32S.
6. Winickoff R. The persistent problem of poor blood pressure control. *Arch Intern Med* 1987;147:1393-6.
7. Nwankwo T, Yoon SS, Burt V, Gu Q. Hypertension among adults in the United States: National Health and Nutrition Examination Survey, 2011-2012. *NCHS Data Brief* 2013:1-8.
8. Cushman W, Ford C, Cutler J, et al. Success and predictors of blood pressure control in diverse North American settings: The antihypertensive and lipid-lowering treatment to prevent heart attack trial (ALLHAT). *J Clin Hypertens* 2002;4:393-404.
9. Victor RG, Ravenell JE, Freeman A, et al. Effectiveness of a Barber-Based Intervention for Improving Hypertension Control in Black Men: The BARBER-1 Study: A Cluster Randomized Trial. *Arch Intern Med* 2011;171:342-50.
10. Glynn LG, Murphy AW, Smith SM, Schroeder K, Fahey T. Interventions used to improve control of blood pressure in patients with hypertension. *Cochrane Database Syst Rev* 2010:CD005182.
11. Odedosu T, Schoenthalleft A, Vieira DL, Agyemang C, Ogedegbe G. Overcoming barriers to hypertension control in African Americans. *Clevel Clin J Med* 2012;79:46-56.
12. McAdams DP. *The stories we live by: Personal myths and the making of the self.* . New York; 1993.
13. Kreuter MW, Green MC, Cappella JN, et al. Narrative communication in cancer prevention and control: a framework to guide research and application. *Ann Behav Med* 2007;33:221-35.
14. J B. *Acts of Meaning.* Cambridge, MA: Harvard University Press; 1990.
15. Kreuter MW, Holmes K, Hinyard LJ, et al. Narrative Communication in Cancer Prevention and Control: A Framework to Guide Research and Application. *Ann Beh Med* 2007;33:221-35.
16. Guttman N, Gesser-Edlesburg, A., Israelashvili, M. The Paradox of Realism and "Authenticity" in Entertainment-Education: A Study of Adolescents' Views about Anti-Drug Use Dramas. In: *Health Communication*; 2008:128-41.
17. Busselle R. B, H. Fictionality and Perceived Realism in Experiencing Stories: A Model of Narrative Comprehension and Engagement. *Communication Theory* 2008;18:255-80.
18. Hinyard LJ, Kreuter MW. Using narrative communication as a tool for health behavior change: A conceptual, theoretical, and empirical overview. *Health Education & Behavior* 2007;34:777-92.
19. Hinyard LJ, Kreuter MW. Using narrative communication as a tool for health behavior change: a conceptual, theoretical, and empirical overview. *Health Educ Behav* 2007;34:777-92.
20. Smitherman G. *Talkin that talk.* New York: Routledge; 1999.

21. Williams-Brown S, Baldwin DM, Bakos A. Storytelling as a method to teach African American women breast health information. *Journal of cancer education : the official journal of the American Association for Cancer Education* 2002;17:227-30.
22. Wolff M, Bates T, Beck B, Young S, Ahmed SM, Maurana C. Cancer prevention in underserved African American communities: barriers and effective strategies--a review of the literature. *WMJ : official publication of the State Medical Society of Wisconsin* 2003;102:36-40.
23. Pandit AU, Tang JW, Bailey SC, et al. Education, literacy, and health: Mediating effects on hypertension knowledge and control. *Patient Educ Couns* 2009;75:381-5.
24. Houston TK, Allison JJ, Sussman M, et al. Culturally Appropriate Storytelling to Improve Blood Pressure. *Ann Intern Med* 2011;154:77-84.
25. High Blood Pressure Tools & Resources. 2016. (Accessed 8/3/12, 2012, at http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/HighBloodPressureToolsResources/High-Blood-Pressure-Tools-Resources_UCM_002055_Article.jsp.)
26. High Blood Pressure. 2016. (Accessed 8/2/12, 2012, at <http://www.cdc.gov/bloodpressure/>.)
27. How is High Blood Pressure Treated. 2016. (Accessed 8/2/12, 2012, at <http://www.nhlbi.nih.gov/health/health-topics/topics/hbp/treatment>.)
28. Bokhour BG, Solomon J, Cohn EC, et al. Patient Perspectives on Managing Hypertension: Developing a New Conceptual Model of Patient Behavior. *J Gen Intern Med* 2009;24:134.
29. Fix GM, Houston TK, Barker AM, et al. A novel process for integrating patient stories into patient education interventions: Incorporating lessons from theater arts. *Patient Educ Couns* 2012;88:455-9.
30. Horne R, Weinman J. Patients' beliefs about prescribed medicines and their role in adherence to treatment in chronic physical illness. *J Psychosom Res* 1999;47:555-67.
31. Ogedegbe G, Mancuso CA, Allegrante JP, Charlson ME. Development and evaluation of a medication adherence self-efficacy scale in hypertensive African-American patients. *J Clin Epidemiol* 2003;56:520-9.
32. Morisky DE, Ang A, Krousel-Wood M, Ward HJ. Predictive Validity of a Medication Adherence Measure in an Outpatient Setting. *Journal of Clinical Hypertension* 2008;10:348-54.
33. Parker RM, Baker DW, Williams MV, Nurss JR. The test of functional health literacy in adults: a new instrument for measuring patients' literacy skills. *J Gen Intern Med* 1995;10:537-41.
34. Green MC, Brock TC. The role of transportation in the persuasiveness of public narratives. *J Pers Soc Psychol* 2000;79:701-21.
35. Gerber BS, Brodsky IG, Lawless KA, et al. Implementation and evaluation of a low-literacy diabetes education computer multimedia application. *Diabetes Care* 2005;28:1574-80.
36. Kressin NR, Orner MB, Manze M, Glickman ME, Berlowitz D. Understanding contributors to racial disparities in blood pressure control. *Circ Cardiovasc Qual Outcomes* 2010;3:173-80.
37. Goss L, Barnes M, eds. *Talk that talk*. New York: Simon and Schuster; 1989.
38. Baker DW, Parker RM, Williams MV, et al. The health care experience of patients with low literacy. *Archives of family medicine* 1996;5:329-34.
39. Williams MV, Baker DW, Parker RM, Nurss JR. Relationship of functional health literacy to patients' knowledge of their chronic disease. A study of patients with hypertension and diabetes. *Arch Intern Med* 1998;158:166-72.
40. Campbell T, Dunt D, Fitzgerald JL, Gordon I. The impact of patient narratives on self-efficacy and self-care in Australians with type 2 diabetes: stage 1 results of a randomized trial. *Health Promot Int* 2015;30:438-48.
41. Falzon C, Radel R, Cantor A, d'Arripe-Longueville F. Understanding narrative effects in physical activity promotion: the influence of breast cancer survivor testimony on exercise beliefs, self-efficacy, and intention in breast cancer patients. *Support Care Cancer* 2015;23:761-8.

42. Frank LB, Murphy ST, Chatterjee JS, Moran MB, Baezconde-Garbanati L. Telling stories, saving lives: creating narrative health messages. *Health Commun* 2015;30:154-63.
43. Cherrington A, Williams JH, Foster PP, et al. Narratives to enhance smoking cessation interventions among African-American smokers, the ACCE project. *BMC Res Notes* 2015;8:567.
44. Bandura A. Health promotion by social cognitive means. *Health Education & Behavior* 2004;31:143-64.
45. Bandura A. Social cognitive theory: An agentic perspective. *Annu Rev Psychol* 2001;52:1-26.
46. Gallant MP. The influence of social support on chronic illness self-management: A review and directions for research. *Health Educ Behav* 2003;30:170-95.
47. Long JA, Jahnle EC, Richardson DM, Loewenstein G, Volpp KG. Peer mentoring and financial incentives to improve glucose control in African American veterans: a randomized trial. *Ann Intern Med* 2012;156:416-24.
48. Whittle J, Schapira MM, Fletcher KE, et al. A randomized trial of peer-delivered self-management support for hypertension. *Am J Hypertens* 2014;27:1416-23.
49. Beune E, Haafkens JA, Schuster JS, Bindels PJE. 'Under pressure': how Ghanaian, African-Surinamese and Dutch patients explain hypertension. *Journal of Human Hypertension* 2006;20:946-55.
50. Bokhour B, Cohn E, Cortés D, et al. The Role of Patients' Explanatory Models and Daily-Lived Experience in Hypertension Self-Management. *J Gen Intern Med* 2012;27:1-9.
51. Kleinman A, Eisenberg L, Good B. Culture, illness, and care- clinical lessons from anthropologic and cross-cultural research *Annals of Internal Medicine* 1978;88:251-8.
52. Cohn ES, Cortés DE, Fix G, Mueller N, Solomon JL, Bokhour BG. Habits and routines in the daily management of hypertension. *Journal of Health Psychology* 2012;17:845-55.
53. Ashton CM, Houston TK, Williams JH, et al. A stories-based interactive DVD intended to help people with hypertension achieve blood pressure control through improved communication with their doctors. *Patient Educ Couns* 2009;79:245-50.