

Implicit and Explicit Attitudes Toward Antihypertensive Medications Explain Variation in Pharmacy Refill and Self-Reported Adherence Beyond Traditional Risk Factors: Potential Novel Mechanism Underlying Adherence

The following is a synopsis of “Implicit and Explicit Attitudes Toward Antihypertensive Medications Explain Variation in Pharmacy Refill and Self-Reported Adherence Beyond Traditional Risk Factors: Potential Novel Mechanism Underlying Adherence” published in the *American Heart Association* in January 2021.

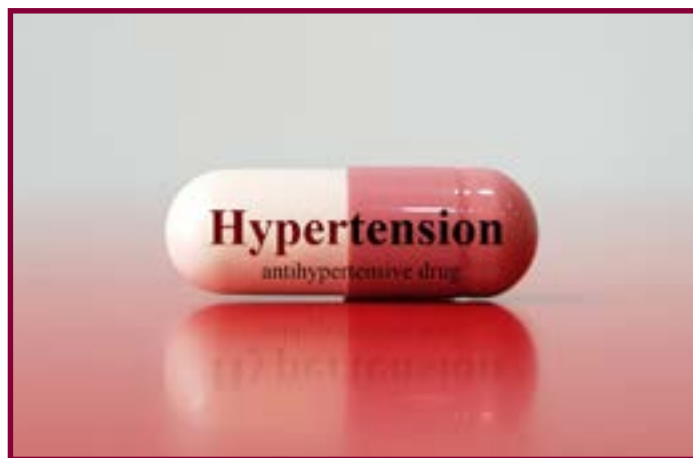


What is already known on this topic?

In 2019, hypertension contributed to more than half a million deaths in the United States¹, with roughly 49.6% of all adults over the age of 20 years diagnosed with hypertension, (systolic >130 mmHg or diastolic >80) and/or are taking antihypertensive medications.² Medications are required in most patients with hypertension to control their blood pressure and to prevent heart disease.³ However, poor adherence to antihypertensive medications have a negative impact on clinical outcomes. Traditionally, social determinants of health such as food insecurity, poverty, and lack of access to transportation have been considered as barriers to medication adherence.⁴

Barriers to adherence are multi-factorial and may include issues with access and cost as well as patient-specific factors including beliefs and behaviors. Million Hearts suggest providers use the SIMPLE method to help improve medication

adherence among patients with hypertension. This method consists of: simplifying the regimen, imparting knowledge, modifying patient's belief and behavior, providing communication and trust, addressing bias, and evaluating adherence with measurement tools such as the proportion of days covered (PDC).⁵ Furthermore, the Community Preventative Service Task Force (CPSTF) recommends tailored pharmacy-based adherence interventions for cardiovascular prevention, which include services such as motivational interviewing, patient tools such as pillboxes, and medication calendars.⁶ Previous studies among patients with rheumatoid arthritis suggest that medication adherence is driven by both explicit (conscious/deliberative) and implicit (subconscious) patient attitudes that may be associated with subjective and objective measures of adherence.⁷



What is added by this article?

The intent of this study was to explain the underlying mechanisms of low medication adherence rates by assessing implicit and explicit attitudes. Implicit attitudes are subconscious while explicit attitudes are stated directly. Validated implicit and explicit measurement tools were used among insured adults (members of Blue Cross and Blue Shield of Louisiana) aged 55 years and older. Implicit



attitudes were measured using the Single Category Implicit Association Test (SC-IAT) which consist of 4 rounds of timed sorting tasks that allows the user to pair images of taking antihypertensive medications with either positive or negative connotations. Explicit attitudes were measured using the Necessity and Concerns subscales of the Beliefs about Medicines Questionnaire, which consist of two five-item scales that assess patient's beliefs and necessity of prescribed medications and if those medications are actually helping with the disease state. In addition to implicit and explicit attitudes, the researchers also captured traditional social determinants of health including demographic (income/poverty status), psychosocial (social support/stress), clinical (quality of healthcare received), and healthcare system (access to clinic and hospitals) determinants via questionnaires. Antihypertensive medication adherence was objectively measured using PDC (a measurement of how many days a patient has access to their

medication), and subjectively measured using the self-reported medication adherence scale. The authors concluded that traditional risk factors including social determinants of health explained 20.8% of the variation in PDC, but after the addition of implicit and explicit attitudes, the proportion of variation explained increased to 35.9%. Likewise, the variation in self-reported adherence (K-Wood-MAS-4) explained 22.8% of the variation in self-reported adherence when accounting for traditional risk factors, but after the addition of explicit attitudes, the proportion of variation explained increased to 28.4%. This demonstrates that after accounting for social determinants of health, explicit and implicit attitudes contribute to behaviors associated with medication adherence.

What are the implications of these findings?

Considering traditional risk factors such as social determinants of health, patient implicit and explicit attitudes towards antihypertensive medications also play a role in medication-taking behavior. Addressing patient attitudes may aid in developing interventions to target explicit and implicit attitudes to improve adherence to antihypertensive medications, which may result in improving blood pressure control and preventing cardiovascular events.

Resources:

Million Hearts:

[Improving Medication Adherence Among Patients with Hypertension](#)

The Community Guide:

[Heart Disease and Stroke Prevention: Tailored Pharmacy-based Interventions to Improve Medication Adherence](#)

References

1. Centers for Disease Control and Prevention, National Center for Health Statistics. [About Multiple Cause of Death, 1999–2019](#). CDC WONDER Online Database website. Atlanta, GA: Centers for Disease Control and Prevention; 2019. Accessed February 1, 2021.
2. Centers for Disease Control and Prevention. (2022, January 6). FastStats - hypertension. Centers for Disease Control and Prevention. Retrieved January 14, 2022, from <https://www.cdc.gov/nchs/fastats/hypertension.htm>
3. Bundy JD, Li C, Stuchlik P, Bu X, Kelly TN, Mills KT, He H, Chen J, 22. Whelton PK, He J. Systolic blood pressure reduction and risk of car- diovascular disease and mortality: a systematic review and network 23. meta- analysis. JAMA Cardiol. 2017;2:775–781. DOI: 10.1001/jamac ardio.2017.1421.
4. Donneyong, M. M., Chang, T. J., Jackson, J. W., Langston, M. A., Juarez, P. D., Sealy- Jefferson, S., Lu, B., Im, W., Valdez, R. B., Way, B. M., Colen, C., Fischer, M. A., Salsberry, P., Bridges, J., & Hood, D. B. (2020). Structural and Social Determinants of Health Factors Associated with County-Level Variation in Non-Adherence to Antihypertensive Medication Treatment. International journal of environmental research and public health, 17(18), 6684. <https://doi.org/10.3390/ijerph17186684>
5. Centers for Disease Control and Prevention. (2020, April 20). Improving medication adherence among patients with hypertension. Centers for Disease Control and Prevention. Retrieved January 14, 2022, from <https://millionhearts.hhs.gov/data-reports/factsheets/adherence.html>
6. Heart disease and stroke prevention: Tailored pharmacy-based interventions to improve medication adherence. The Guide to Community Preventive Services (The Community Guide). (2021, December 16). Retrieved January 14, 2022, from <https://www.thecommunityguide.org/findings/heart-disease-stroke-prevention-tailored-pharmacy-based-interventions-improve-medication-adherence>
7. Linn AJ, Vandeberg L, Wennekers AM, Vervloet M, van Dijk L, van den Bemt BJ. Disentangling rheumatoid arthritis patients' implicit and ex- plicit attitudes toward methotrexate. Front Pharmacol. 2016;7:233. DOI: 10.3389/fphar.2016.00233.

Citation

Craig LS, Peacock E, Mohundro BL, Silver JH, Marsh J, Johnson TC, Kelly PA, Bazzano LA, Cunningham M, Petty RE, Krousel-Wood M. Implicit and Explicit Attitudes Toward Antihypertensive Medications Explain Variation in Pharmacy Refill and Self-Reported Adherence Beyond Traditional Risk Factors: Potential Novel Mechanism Underlying Adherence. J Am Heart Assoc. 2021 Mar 16;10(6):e018986. doi: 10.1161/JAHA.120.018986. Epub 2021 Mar 4. PMID: 33660523; PMCID: PMC8174192.



**U.S. Department of
Health and Human Services**
Centers for Disease
Control and Prevention