Public Health Report for the City of Providence, Rhode Island, for 2020-2021

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This report examines a number of health outcomes in the city of Providence in Rhode Island, identifies the priority health challenge, and researches evidence-based strategies and programs which can help address the situation. The report is followed by an annotated bibliography of the journal articles cited for evidence-based programs.

Background and setting

Providence—Rhode Island's capital city—is situated within Providence county at the head of Narragansett Bay on the Providence River. Founded in 1636, Providence played an important part in the American Revolution, culminating in the signing of the Rhode Island Independence Act on May 4, 1776 two-months prior to the country's Declaration of Independence. Incorporated as a city in 1831, Providence became the sole capital of Rhode Island in 1900 (Editors of Encyclopedia Britannica, 2020). Although this city was one of the foremost in the US in manufacturing by the end of the 19th century, the 20th century witnessed lost jobs due to decline of industries in general, rampant industrial pollution including the impact on Providence waterways, and migration of people to the suburbs (Joukowsky Institute for Archaeology, n.d.).

The city of Providence had an estimated population of nearly 189,600 in the year 2022. With a land area of 18.40 square miles, Providence had an estimated 9,676 people per square mile (United States [U.S.] Census Bureau, 2021). Non-Hispanic whites comprised 34% of the total population of Providence, whereas 43% were Hispanic or Latinos (2021, American Community Survey [ACS], 5-year estimates). During 2017–21, approximately 84% of 25 years and older Providence residents graduated from high school or held higher qualifications, while 33% had a Bachelor's or more advanced degree (U.S. Census Bureau, 2021). During this period, the median household income was $55,787 (in 2021 dollars) and 21.5% of Providence residents lived in poverty (2021, ACS, 5-year estimates).

Priority Public Health Issue and Rationale

Health-related information on Providence, RI

This report utilizes information retrievable from "PLACES: Local Data for Better Health" (Centers for Disease Control and Prevention [CDC], 2023) to examine cardiovascular disease (heart disease and stroke), blood pressure medication as a preventive measure, current smoking behavior, and mobility disability among the people of Providence (FIPS code 4459000). In 2021, 4.7% of adults (≥18 years of age) had coronary heart disease, with an age-adjusted prevalence of 6% (PLACES Project, 2023). In the same year, the estimated prevalence and the age-adjusted prevalence of stroke among adults were, respectively, 2.6% and 3.3% (PLACES Project, 2020). The overall prevalence of cardiovascular disease in Providence was comparable with that in the entire state (7.4%) (America's Health Rankings, 2023). Nearly one out of every five (19%) adults–17% after age-adjustment–in Providence had frequent mental distress, defined as self-reported not good mental health for 14 or more days within the previous 30 days, in 2021 (PLACES Project, 2023). This appears higher than the corresponding prevalence of 14.3% for Rhode Island (America's Health Rankings, 2023).

The estimated prevalence of taking blood pressure medication(s) among adults with high blood pressure was 74.3% in 2017, with an age-adjusted prevalence of 65.3% (PLACES Project, 2023). An analysis of Rhode Island All Payer Claims Database (HealthFacts RI) for 2018–19 and other relevant data, the adherence to antihypertensive medication—defined as having access to the medication for at least 80% of the days during a study period—ranged from 66% to 83% in the state (Rhode Island Department of Health [RIDOH], n.d.) with Providence being in the 66–70% range. This suggests that many parts of the state are doing better in terms of adherence to antihypertensives than Providence. An estimated 15% of adults in Providence were current smokers during 2021 with an age-adjusted prevalence of 17% (PLACES Project, 2023. This was higher than the prevalence of smoking (12.4%) for RI (America's Health Rankings, 2023). In 2021, 12.4% of adults had a mobility disability, with an age-adjusted prevalence of 15.3%

(PLACES Project, 2023). This is slightly higher than the statewide prevalence of 10% for mobility disability, described as serious difficulty in walking or climbing stairs (CDC, 2023).

Health Priority for the City of Providence, RI

Although only a limited number of health indicators were examined for this report, and despite the importance of all aforementioned health outcomes and health-related factors, I consider addressing insufficient adherence to antihypertensive medication as the priority for Providence city because there is a substantial room for improvement, even by the standards of RI as a whole. Furthermore, undetected or uncontrolled high blood pressure can potentially lead to complications affecting various organs and systems.

High blood pressure induced artery damage can result in blockage of the arteries—an effect exacerbated by low density lipoprotein (LDL) cholesterol accumulation along damaged blood vessels--leading to insufficient blood flow to heart muscles and heart attack (American Heart Association [AHA], 2021). Stroke, heart failure, kidney disease or failure, loss of vision, sexual dysfunction, angina or chest pain and peripheral artery disease are some of the other consequences (American Heart Association [AHA], 2021). Uncontrolled hypertension, among those yet to start taking antihypertensives, is a nationwide public health concern (CDC, 2021). There is considerable disparity in blood pressure control among those recommended antihypertensives, with worse control among racial/ethnic minorities compared with non-Hispanic white adults (CDC, 2019).

Improving high blood pressure medicine intake among known hypertensives is a priority because of the reasons stated above and given that taking medications as advised, in conjunction with lifestyle changes, is one of the ways to manage high blood pressure.

Evidence-Based Recommendations

Yang and colleagues (2020) studied more than 700 million prescription blood pressure medicine dispensing data for factors promoting blood pressure medication adherence across U.S. states. They

found insufficient and variable usage of fixed-dose combination prescriptions, a known strategy to improve adherence to antihypertensives especially for patients requiring multiple medications to control their blood pressure (Yang et al., 2020). In addition, mail order pharmacies (Fernandez et al., 2016) and increasing days' supply per fill (Choudhry et al., 2011) have been found to be effective in addressing barriers to adherence due to limited pharmacy access, complex regimens, and poor refill consolidation, which refers to synchronizing the refill dates for people on multiple drugs (Ross et al., 2013; Yang et al., 2020).

State Medicaid programs can help improve blood pressure medication adherence by modifying the insurance formulary restrictions or tier status of some medicines such as generic fixed-dose combinations, and covering 90-day refills, coupled with reaching out to prescribers on common adherence barriers for Medicaid patients and the benefits of some of the strategies outlined above (Yang et al., 2020). Making medications more affordable including the lowering of out-of-pocket spending can facilitate medication adherence (Shrank et al., 2006; Njie et al., 2015).

In addition to the collaborative efforts at improving adherence to antihypertensives listed in the previous paragraphs, interventions directed towards communities and/or individuals can have limited impacts. For instance, the Prime-Time Sister Circles ®, an ongoing (2016–2022) community-based peer support program for a group of hypertensive 40–75-year-old African-American women living in Washington, D.C. or Baltimore, MD, is aiming to address disparities by improving antihypertensive adherence (Ibe et al., 2021). Behavior-change techniques have also showed effectiveness in improving adherence to medications for treating high blood pressure (Willey, 1999). Data from more than 2,500 Black hypertensive adults revealed that high patient-clinician communication, as opposed to low communication, and shared decision making were associated with antihypertensive adherence (Chang et al., 2021).

Based on the evidence cited above, multisectoral collaboration and policy-level changes to improve access and affordability of antihypertensives, supporting the public in advocacy efforts to improve access, culturally sensitive community interventions to enhance peer support, individual-level behavior change strategies as well as automated reminders to patients and their caregivers, and promoting better communication with health care providers could help improve compliance with blood pressure medicines among adults living in Providence. A single strategy would probably have very limited impact, if any. A combination of efforts at various levels that can be tailored as per the unique needs could go a long way.

Limitations

A holistic approach such as the one outlined above is easier said than done. Policy changes, especially those related to healthcare and access to medications, can be a slow and non-linear process. Bringing all stakeholders to the table and arriving at some kind of consensus can be challenging. On the other hand, it may be relatively simpler to institute health programs at individual, interpersonal or community levels, which will, however, be limited in scope. The benefits of such programs can be short-lasting, but can be improved through community ownership.

Summary and Conclusions

An estimated 8% of Providence residents had cardiovascular conditions—heart disease and stroke, whereas 16% reported frequent mental distress. One out of five adults were current smokers. Blood pressure medication adherence among adults (70%) in Providence city was lower than many other parts of the state of RI. Strategies such as fixed-dose combinations, making the refills more convenient, mail order pharmacies, expanding coverage, behavior modification techniques, community support and empowerment, better provider-patient communications, and patient’s involvement in decision making can together help improve antihypertensive adherence.

[Please note that for Part II: Annotated bibliography, you need to annotate any three articles that you have cited under evidence-based recommendations. I have not provided a sample for that as the instructions are quite straight forward]

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