

Combating Chronic Disease with Barbershop Health Interventions: A Review of Current Knowledge and Potential for Big Data

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Community-based participatory research (CBPR) using barbershop interventions is an emerging approach to address health disparities and promote health equity. Barbershops serve as trusted community settings for health education, screening services, and referrals. This narrative mini-review provides an overview of the current state of knowledge regarding CBPR employing barbershop interventions and explores the potential for big data involvement to enhance the impact and reach of this approach in combating chronic disease. CBPR using barbershop interventions has shown promising results in reducing blood pressure among Black men and improving diabetes awareness and self-management. By increasing testing rates and promoting preventive behaviors, barbershop interventions have been successful in addressing infectious diseases, including HIV and COVID-19. Barbershops have also played roles in promoting cancer screening and increasing awareness of cancer risks, namely prostate cancer and colorectal cancer. Further, leveraging the trusted relationships between barbers and their clients, mental health promotion and prevention efforts have been successful in barbershops. The potential for big data involvement in barbershop interventions for chronic disease management offers new opportunities for targeted programs, real-time monitoring, and personalized approaches. However, ethical considerations regarding privacy, confidentiality, and data ownership need to be carefully addressed. To maximize the impact of barbershop interventions, challenges such as training and resource provision for barbers, cultural appropriateness of interventions, sustainability, and scalability must be addressed. Further research is needed to evaluate long-term impact, cost-effectiveness, and best practices for implementation. Overall, barbershops have the potential to serve as key partners in addressing chronic health disparities and promoting health equity.

INTRODUCTION

Community-based participatory research (CBPR) is a collaborative framework, engaging community mem-

bers, researchers, and other stakeholders in the design, implementation, and dissemination of research findings. CBPR is particularly useful in addressing chronic health disparities and promoting health equity by ensuring the

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Abbreviations: CBPR, Community-based participatory research; BP, Blood pressure; CI, Confidence interval; PCP, Primary care physician; LABBPS, Los Angeles Barbershop Blood Pressure Study; ACC/AHA, American College of Cardiology/American Heart Association.

Keywords: Review, CBPR, barbershop, salon, chronic, disease, big data, hypertension, blood pressure, diabetes, A1c, HIV, COVID, prostate, colorectal, cancer, mental health, depression

Author Contributions: PK, KA, and RD: literature search, initial drafting, and editing.

research questions and interventions are relevant, culturally appropriate, and feasible in the target communities. One promising strategy for CBPR is to engage barbershops as trusted community settings for health promotion and chronic disease prevention. Barbershops, often deeply embedded in many communities, are not just centers for grooming services but also vibrant social hubs where people connect and share experiences. As such, barbershops can be ideal locations for delivering health education, screening services, and referrals to healthcare services, especially critical in underserved communities where traditional healthcare access may be limited or mistrusted.

The use of barbershops as settings for health promotion and disease prevention is gaining momentum. Several studies have reported positive results in improving health outcomes among men related to chronic cardiometabolic illnesses, infectious diseases, cancer, and mental health conditions. While most studies have been conducted in the United States, this approach is also being implemented in Canada, the United Kingdom, Japan, France, and Morocco [1-4]. Barbershops are now regarded as accessible spaces for researchers to gather data on attitudes related to personal and community health, as well as the healthcare system [5-10]. Additionally, there is ongoing exploration into the potential for big data involvement in CBPR employing barbershop interventions, thereby presenting novel opportunities to enhance the impact and broaden the scope of this approach in chronic disease management [11].

This narrative review delves into the current state of CBPR combating chronic disease in barbershop settings. Through a review of the relevant literature, this article offers insights into the potential benefits, challenges, and ethical considerations of integrating barbershop interventions with big data, aiming to provide thoughtful recommendations for future research and innovating implementations amidst a growing global chronic disease burden.

CARDIOMETABOLIC DISEASE

Hypertension, a major chronic cardiovascular risk factor, disproportionately affects minoritized individuals, eg, Black Americans experience higher prevalence and rates of hypertension-related disease progression and complications [12-16]. Barbershop-based interventions have been shown to be effective in significantly reducing blood pressure (BP) among these populations. In 2010, the BARBER-1 study in Dallas County, Texas reported cluster-randomized barbershop-based hypertension education coupled with BP monitoring and encouragement/connection to physician care led to an 8.8% higher hypertension control rate (95% confidence interval (CI), 0.8% to 16.9%; $P = 0.04$) and a 2.5 mmHg (95% CI, -5.3 to 0.3

mmHg change; $P = 0.08$) systolic BP reduction compared to education alone among Black men after 10 months of intervention [17]. While the results of the BARBER-1 study initially seemed underwhelming, further analysis revealed participants referred to hypertension specialist physicians had a 21 ± 4 mmHg greater reduction in systolic BP than the comparison group ($P < 0.0001$). Participants referred to primary care physicians (PCP) had just a 4 ± 4 mmHg greater reduction than the comparison group ($P = 0.31$) – with authors suggesting BARBER-1 outcomes had been diluted by undertreatment [18]. In 2018, the lead author of the BARBER-1 study led the cluster-randomized Los Angeles Barbershop Blood Pressure Study (LABBPS). LABBPS compared outcomes between a control group, which received hypertension education plus encouragement to follow-up with their PCP, and an intervention group, which was additionally paired with one of two specially trained pharmacists certified by the American Society of Hypertension. These pharmacists would manage participant hypertension medications under an agreement with the participant's PCP. LABBPS showed a 21.6 mmHg (95% CI, 14.7 to 28.4; $P < 0.001$) greater mean systolic BP reduction and 14.9 mmHg (95% CI, 10.3 to 19.6; $P < 0.001$) greater mean diastolic BP reduction in the intervention group, compared to the control group at 6 months. Roughly 64% of the intervention group, compared to only 12% of the control group, reached the predefined goal BP of $<130/80$, based on the 2017 American College of Cardiology/American Heart Association (ACC/AHA) guidelines [19,20]. These findings were reported to be highly cost-effective based on 2014 ACC/AHA cost/value methodology guidelines [21], mean cost of \$42,717 per quality-adjusted life-years gained, and sustainable, 20.8 mmHg (95% CI, 13.9 to 27.7; $P < 0.0001$) greater mean systolic BP reduction in the intervention group at 12 months [22,23].

Diabetes mellitus also affects minoritized populations at higher rates than the general population [24]. Barbershop-based interventions can be effective in improving diabetes awareness and self-management among men. The Barbershop Health Outreach Program is a replicable grassroots model that has screened over 7000 Black men through nearly 300 barbershops across over 20 cities and six states [25]. Further, barbershops can be safe locations for participants to discuss perceptions of their personal health and interactions with the healthcare system. A recent qualitative study at a barbershop in New York City aimed to recruit Black men with no known history of diabetes who ultimately received a barbershop point-of-care HbA1c in the pre-diabetes or diabetes range. This study revealed some participants were surprised their HbA1c was abnormal, some stated their physicians never mentioned an abnormal reading previously, and many others reported recent examples of negative interactions

with physicians [26]. Another New York City study found about one in three Black men visiting barbershops were open to having their HbA1c tested at the visit. The 9.0% prevalence of undiagnosed diabetes amongst tested individuals in this study was notably higher than the 3.6% estimated prevalence among New York City residents. For this reason, the authors cautioned the generalization of their results [27].

INFECTIOUS DISEASE

Barbershop-based HIV/STI prevention programs have shown promise in understanding risk behaviors and increasing HIV testing rates among Black men [28-32]. The Barbershop Talk With Brothers program found a statistically significant increase in condom use ($P < 0.05$), evidence of increased perception of community empowerment, and decreased HIV stigma after participating in education modules that focus on group discussions with strength-based guiding principles, ie, community cohesiveness; notion that participants are future providers and leaders in their community; social and personal behavioral determinants of HIV risk [33,34]. Further, a recent cluster-randomized controlled trial in Philadelphia, Pennsylvania showed barbershop interventions that boosted self-efficacy for condom-use translated to improved condom-use among African American men ($P < 0.0001$) [35].

The COVID-19 pandemic has highlighted the importance of community-based interventions in addressing infectious diseases. Barbershops have been used as locations for COVID-19 testing and vaccine distribution, as well as for health education and outreach efforts [36]. COVID-19 vaccination hesitancy, especially amongst minoritized and underserved populations, has been an important factor in the fight against COVID-19. Participants have been shown to feel comfortable at barbershops and salons discussing their reasoning for vaccination hesitancy, eg, medical establishment mistrust, unknown short-/long-term side effects, and the political environment promoting racial injustice at the time, and factors that would shift them towards accepting vaccination, eg, recommendation from a trusted healthcare provider [37].

CANCER

Prostate cancer ranks as the second most prevalent cancer in men in the US. In an innovative approach, barbers have taken on the role of educators, informing their clients about prostate cancer. This strategy has shown promising results. For instance, a study in Tampa, Florida, found that men were significantly more interested in discussing prostate cancer screening with their primary care providers after receiving education from barbershop

staff ($P < 0.001$) [38-40].

Colorectal cancer is the third most common cancer in both men and women in the US. Minoritized individuals including Black Americans have higher incidence rates of colorectal cancer and are more likely to be diagnosed at later stages of the disease, which may contribute to higher mortality rates [41]. A 3-parallel-arm randomized trial recruiting men from New York City barbershops demonstrated that racially minoritized participants who received telephone-based preclinical patient navigation were significantly more likely to complete colorectal cancer screenings within 6 months compared to those who underwent motivational interviewing (17.5% vs 8.4%; $P < 0.01$) [42]. These findings highlight the ongoing challenge and benefit of connecting underserved communities to regular health screenings, potentially with community partners, eg, barbershops.

Potential barbershop interventions extend beyond cancer screening awareness. They may also serve as effective platforms for increasing overall cancer knowledge and promoting behaviors that reduce cancer risk, such as healthy eating and physical activity. Furthermore, barbershops can host cancer screening events, thereby improving access for individuals who may lack a regular healthcare provider or face other barriers to screening.

While these initiatives have predominantly focused on men, there is a growing need for similar programs targeting women and individuals with diverse gender identities. Notably, Black women and other minoritized groups in various regions of the US exhibit lower mammography rates, often hindered by barriers including cost, insurance issues, childcare, employment, and transportation challenges [43]. A cluster-randomized study conducted in 2011 in San Diego, California, revealed that Black women frequenting salons with at least one trained educator had significantly higher mammography rates compared to those in the control group [44]. Additionally, a 2012 study also showed promise of salons in boosting skin cancer awareness [45].

MENTAL HEALTH

Barbershops provide a unique opportunity for addressing mental health concerns due to their role as community gathering places and the trusted relationships that barbers have with their clients. Barbers can serve as trusted confidants and sources of emotional support, making them ideal partners in mental health promotion and prevention, including discussions surrounding negative experiences. A qualitative study, recruiting Black men visiting barbershops in four US states highlighted a correlation between personal experiences of racial discrimination and increased depressive symptoms across all age groups. The study noted that self-reliance was as-

sociated with fewer depressive symptoms in participants aged either 18 to 29 years or 40 years and older. However, younger participants, particularly those aged 18 to 39 years, who reported difficulty or fear in expressing emotions, were found to have more depressive symptoms [46]. Another study, published a year later, provided more nuanced insights, replicating the link between racial discrimination and depressive symptoms in African American and Black men. It also indicated that masculine self-reliance, coupled with John Henryism – a strategy of coping with prolonged stress through high-effort resilience – was associated with decreased depressive symptoms [47-49].

CBPR using barbershop interventions can also be effective in addressing mental health stigma and increasing awareness of available mental health resources. It has been shown that barbers are willing to be trained/serve as advisors and provide information on available mental health services and resources, as well as help to reduce the stigma associated with seeking help for mental health concerns [50].

Beyond raising awareness, barbershop-based interventions may also foster healthy behaviors that positively impact mental health. For instance, barbershops can offer education on healthy nutrition, physical activity, and stress management techniques – all beneficial for mental well-being. Barbershops can also host mental health events, such as group therapy sessions or mental health screenings, thereby improving access to mental health services for men who may face barriers to accessing traditional mental health services.

BIG DATA, BARBERSHOPS, AND CHRONIC DISEASE

Big data refers to often large or complex datasets extracted from sources such as electronic health records, social media, wearable devices, or other digital platforms. When harnessed through advanced analytics, these data sets can uncover patterns, forecast health outcomes, support decision-making in healthcare, and help explain concepts to patients [51-56].

Big data possesses significant potential for enhancing chronic disease management and mitigation. Big data can be used to identify and target the most appropriate barbershops for intervention, based on demographic, geographic, and health-related data to pinpoint communities that would benefit most from these programs. This approach can also be used to monitor and evaluate the effectiveness of interventions for chronic disease in real-time, and to identify areas for timely improvement. Further, big data can be used to personalize interventions based on individual-level data such as health status, behaviors, and preferences. There is growing evidence personalized care

plans may increase engagement and adherence in chronic disease management [57].

Despite these advantages, the use of big data in health initiatives also poses several challenges and ethical considerations. For example, the use of big data raises questions around privacy, confidentiality, and data ownership. It is important to ensure that the data is collected, stored, and analyzed in a secure and ethical manner, and that the community members are involved in the decision-making processes around data use. Transparent communication and inclusive practices are essential to maintain trust and ensure that the community benefits from the data collected. Further, big data applications should be designed to address potential biases and disparities. Careful consideration must be given to ensure that data analytics do not inadvertently reinforce existing health inequities, and instead contribute to reducing them [58].

CONCLUSIONS AND OUTLOOK

In summary, CBPR utilizing barbershop interventions has emerged as a promising strategy for combating chronic disease, particularly among men and those from underserved or minoritized communities. The potential for big data involvement in this approach offers new opportunities to enhance the impact and reach of these interventions. However, careful consideration of the ethical and practical implications of big data use is needed to ensure that the benefits are realized while protecting the rights and interests of the community members involved.

Chronic diseases encompass many leading causes of mortality in high-, middle-, and low-income countries. These conditions present multifaceted challenges that necessitate comprehensive strategies for prevention and management. Barbershops hold potential to serve as key community partners in combating chronic disease and fostering health equity. However, several challenges need to be addressed to maximize the impact of these interventions. These include ensuring adequate training and resources for barbers to deliver the interventions, ensuring that the interventions are culturally appropriate and tailored to the specific needs of the community, and ensuring that the interventions are sustainable and scalable. More research is needed to evaluate the long-term impact and cost-effectiveness of these interventions, and to identify best practices for implementing them in various settings. Importantly, to our knowledge there has not been a case-control study testing the setting of a barbershop vs other setting to elucidate the independent effect of barbershops themselves in improving health metrics. The nature of the social environment in barbershops, including barbers and others consistently present, that make barbershops effective settings for public health interventions is yet to be explored. Further, as researchers expand studies

partnering with barbershops, it is important that they do not lose their cultural significance as a safe space.

Funding: This article was not supported by any funding source.

Acknowledgments: We thank the anonymous reviewers and YJBM Chronic Disease Issue Editors Noah Lee and Bassel Shanab for their thorough reading and thoughtful comments.

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