Received: 25 January 2023 | Accepted: 26 January 2023

DOI: 10.1002/jac5.1764

jaccp Journal of the American College of Clinical Pharmacy

ACCP COMMENTARY

Call to action: Clinical pharmacist roles and opportunities in health disparities research

Joel C. Marrs Pharm.D., MPH, FCCP | Christine M. Formea Pharm.D., FCCP | Maha Abdalla Pharm.D., Ph.D. | Rochelle L. Brual Pharm.D. | Susie J. Crowe Pharm.D., MPH | Kirstie H. Freibert Pharm.D. | Megan C. Herink Pharm.D., MBA | Alexander R. Hoffman Pharm.D., M.Ed | Ann M. Philbrick Pharm.D., FCCP | Gina M. Prescott Pharm.D., FCCP | Sara Shahdoost Moghadam Pharm.D. | Crystal Zhou Pharm.D.

American College of Clinical Pharmacy, Lenexa, Kansas, USA

Correspondence
American College of Clinical Pharmacy, 13000 W. 87th St. Parkway, Suite 100, Lenexa, KS 66215-4530, USA.
Email: accp@accp.com

Abstract

The roles clinical pharmacists can play in addressing health equity and eliminating health disparities span the areas of quality of care, access to care, use of care, and health outcomes. Through this call to action, we address the importance of dismantling health disparities and describe the potential barriers and challenges to clinical pharmacists becoming involved with and performing health disparities research. Furthermore, we identify solutions to these barriers and challenges by highlighting opportunities for clinical pharmacists to seek training and identify potential funding sources for health disparities research. In addition, we provide examples of previous health disparities research conducted by pharmacists across a wide spectrum of patient populations, areas of practice, and types of research. The goal moving forward is to continue to promote current training opportunities to allow clinical pharmacists to develop and/or improve on their research skillset to expand pharmacist-led research within the focus area of health disparities and ultimately serve as leaders and collaborators in the area.

KEYWORDS
clinical pharmacist, health disparities, health equity, research

1 | INTRODUCTION AND PURPOSE

Despite improvements in health care, disparities, and poor health outcomes persist among disadvantaged groups.[1] Clinical pharmacists play an important role in eliminating health disparities through community involvement, cultural competence, cultural humility, and collaborative research efforts with multidisciplinary health-care teams and trainings, including mentored research. Pharmacists are essential in identifying disadvantaged groups and root causes of health and health-care disparities and promoting health equity.[2] This article defines relevant terms (Table 1), addresses opportunities for clinical pharmacists to pursue health disparities research, and issues a call to action for the pharmacy profession.

This document was prepared by the 2022 Research Affairs Committee: Joel C. Marrs, Pharm.D., MPH, FCCP, BCACP, BCCP, BCPS (Chair); Christine M. Formea, Pharm.D., FCCP, FASHP, BCPS (Vice Chair); Maha Abdalla, Pharm.D., Ph.D.; Rochelle L. Brual, Pharm.D., BCPS; Susie J. Crowe, Pharm.D., MPH; Kirstie H. Freibert, Pharm.D.; Megan C. Herink, Pharm.D., MBA, BCPS; Alexander R. Hoffman, Pharm.D., M.Ed., BCPS, CDCES; Ann M. Philbrick, Pharm.D., FCCP, BCACP; Gina M. Prescott, Pharm.D., FCCP, BCPS; Sara Shahdoost Moghadam, Pharm.D., BCACP, CDCES, AAHIVP; and Crystal Zhou, Pharm.D., Aph, AHSCP, BCACP.

Approved by the American College of Clinical Pharmacy Board of Regents on July 28, 2022.

TABLE 1 Definitions.

Health disparities	Differences in health outcomes between specific population groups as defined by social, demographic, environmental, and geographic attributes *Population groups defined by race, ethnicity, sex, sexual orientation, gender identity, age, educational attainment, disability status, socioeconomic status, and geographic location (Healthy People 2020; NIH 2019; CDC 2011)*
Health care disparities	Differences between population groups in access to care, patient experience, and quality and effectiveness of care
Health literacy	• Personal health literacy is the degree to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others • Organizational health literacy is the degree to which organizations equitably enable individuals to find, understand, and use information and services to inform health-related decisions and actions for themselves and others Note: For the first time, the definition changed to address both personal and organizational aspects of health literacy (Healthy People 2030)
Health equity	The state in which everyone has a fair and just opportunity to attain their highest level of health. Achieving this requires focused and ongoing societal efforts to address historical and contemporary injustices; overcome economic, social, and other obstacles to health and health care; and eliminate preventable health disparities (CDC definition)
Cultural competence	Ability to interact respectfully and effectively with patients from different population groups and provide individualized care to meet patients' social, cultural, and linguistic needs

2 | WHAT IS THE PROBLEM?

Health and health-care disparities, discrimination, and language and health literacy barriers lead to increased morbidity and mortality. Examples include increased ED visits because of uncontrolled asthma among children, racial segregation leading to disparities in breast cancer mortality, lower rates of diabetes services in those experiencing racial discrimination, low rates of pneumococcal vaccination among older adults, obesity, and poor chronic disease management and medication adherence.[1,3–5] Hypertension is especially prevalent among disadvantaged groups, including those with low socioeconomic status. We use hypertension to clearly illustrate factors affecting care at the patient, provider, and public health levels that further widen the disparity gap. A Cochrane meta-analysis found that lower socioeconomic status, lower educational attainment, and occupation were all associated with higher rates of hypertension.[6] In 2011, the Behavioral Risk Factor Surveillance System addressed access to care by identifying almost 160 000 U.S. adults with self-reported hypertension. Among the participants, 19.1% had no health insurance, 18.1% had no primary care provider, and 23.6% could not visit a physician because of cost.[7] A recent study found that lifetime discrimination increased the risk of hypertension in African American patients.[8] Finally, disparities in health outcomes have been studied as well. Blood pressure control rates were lower in Black, Hispanic, and Asian Americans than in White Americans.[3] Poor blood pressure control can lead to worse health outcomes, including a higher risk of stroke in Black patients.[9]

3 | IDENTIFYING BARRIERS AND CHALLENGES

3.1 | Limited published research about impact of clinical pharmacists

Pharmacists' involvement in bridging care gaps, especially when related to social determinants of health (SDOH), has been noted by several organizations, given pharmacists' integration into many clinical practice settings as health care providers and members of the health care team.[10,11] However, more pharmacist-led research on the impact of clinical pharmacists on addressing SDOH are needed. Clinical pharmacists contribute routinely to preventive services, chronic disease state management, and clinical interventions during transitions of care. However, data across pharmacy settings are limited to consistently demonstrate the important contributions and actions performed to achieve medication optimization for each patient in need.[12] Promoting pharmacist-led research can increase the data on how clinical pharmacists best use their unique knowledge and skills to address individuals' social needs and support health equity.[13,14]

3.2 | Funding resources

As with most research, finding funding can be a challenge, especially for pharmacists trying to navigate the public health realm. However, several funding opportunities are available through governmental agencies and nongovernmental national agencies that support health disparities research (Table 2). Local funding opportunities are also important to explore because local health departments, universities, and businesses have a vested interest in the communities they serve. Regardless of the source, funding opportunities may require interprofessional collaborations, given that health disparities research often focuses on addressing SDOH and requires expertise and perspectives from multiple health professionals, including social workers, community health workers, public health professionals, physicians, and

TABLE 2 Health disparities research funding opportunities.

Health disparities research funding opportunities		
Funding agency	**Description**	**Website**
Governmental agencies		
Health Resources and Services Administration (HRSA)	HRSA's mission is to "improve health outcomes and achieve health equity through access to quality services, a skilled health workforce, and innovative, high-value programs." Several offices fall under HRSA, including the Office of Health Equity, Office of Women's Health, Federal Office of Rural Health Policy, HIV/AIDS Bureau, and Maternal and Child Health Bureau. A program drop-down box allows you to search grants according to the office or bureau offering them	https://www.hrsa.gov/grants/find-funding
National Institute on Drug Abuse (NIDA)	NIDA is a federal institute that supports research on the factors leading to substance use disorder as well as the aftereffects and consequences of it	https://nida.nih.gov/funding
NIH Common Fund	NIH Common Fund programs "address emerging scientific opportunities and pressing challenges in biomedical research that no single NIH Institute or Center can address on its own but are of high priority for the NIH as a whole." Some of the many Common Fund programs include the Diversity Program Consortium, the Global Health program, and the Transformative Research to Address Health Disparities and Advance Health Equity program	https://commonfund.nih.gov/grants/fundedresearch
NIH National Institute on Minority Health and Health Disparities (NIMHD)	NIMHD funds research that leads to reductions in health disparities and ultimately improves minority health	https://www.nimhd.nih.gov/funding/nimhd-funding/
U.S. Department of Health and Human Services Office of Minority Health (OMH)	OMH's mission is to "improve the health of racial and ethnic minority populations through the development of health policies and programs that will help eliminate health disparities"	https://www.minorityhealth.hhs.gov/omh/browse.aspx?lvl=1&lvlid=1
National Academies of Sciences, Engineering, and Medicine (NASEM)	NASEM's mission is to "provide independent, objective advice to inform policy with evidence, spark progress and innovation, and confront challenging issues for the benefit of society" through "[r]esearch … that shed[s] light on the factors that drive systemic racial inequities"	https://www.nationalacademies.org/topics/resources-on-diversity-equity-and-inclusion
National Network to Eliminate Disparities in Behavioral Health (NNED)	NNED is network of organizations focused on diversity and health equity issues in mental health and substance use disorder. NNED has a database of searchable grant opportunities from a variety of funders and is searchable by funding source, population, focus area, and funding amount. The database includes a range of grant opportunities, from government grants to foundational grants, as well as other opportunities	https://nned.net/opportunities/funding/
Substance Abuse and Mental Health Services Administration (SAMHSA)	SAMHSA is an agency within the Department of Health and Human Services whose mission is to "reduce the impact of substance abuse and mental illness on America's communities"	www.samhsa.gov
Grants.gov	Grants.gov offers the ability to search government-funded grant opportunities from many sources. Keyword searches are available, and useful searchable terms may include *health disparity*, *minority health*, *substance use disorder*, *rural health*, and *food insecurity*	https://www.grants.gov/
Nongovernmental national agencies		
Rural Health Information Hub (RHIhub)	RHIhub is a comprehensive site for information about and funding opportunities for rural health. The hub's grant funding opportunities are searchable by type, sponsor, topic, and state	https://www.ruralhealthinfo.org/funding/topics/health-disparities
Robert Wood Johnson Foundation (RWJF)	RWJF is a philanthropic organization focused on health. The RWJF's four priority areas are health systems, healthy communities, healthy children and families, and leadership for better health	https://www.rwjf.org/
Community Pharmacy Foundation (CPF)	CPF funds projects related to community pharmacy practice advancement. According to its website, CPF funds projects that meet the following criteria: (1) is it, or does it have the potential to be, financially sustainable; (2) is it transferable to other community pharmacies and nonproprietary; and (3) is it replicable in other community pharmacies	https://communitypharmacyfoundation.org/
Bill & Melinda Gates Foundation	The Bill & Melinda Gates Foundation funds projects within the United States and globally. The foundation's mission is to "create a world where every person has the opportunity to live a productive healthy life"	https://www.gatesfoundation.org/about/how-we-work/grant-opportunities

(Continues)

TABLE 2 (Continued)

Health disparities research funding opportunities		
Funding agency	**Description**	**Website**
Local funding opportunities		
County and state health departments	Local and state health departments often offer funding for local projects. Check your county and state health departments for potential opportunities. Setting up meetings with individuals who work within your area of interest helps identify opportunities for potential funding both within the health department and elsewhere. For example, the Indiana Department of Health has funding opportunities available at https://www.in.gov/health/mch/funding-opportunities/	
Local business philanthropy	Local businesses and organizations are interested in the health of the community and often partner with organizations within the community. For example, Eli Lilly, a pharmaceutical company located in Indianapolis, Indiana, has a separate private philanthropic organization (https://lillyendowment.org/) that funds various health equity and homelessness projects within the local community. Communities may have similar businesses willing to invest in the local community	
Local university funding	Local universities may offer small grant opportunities for health equity-related projects. Some may require student involvement in order to receive funding. Establishing collaborations with individuals within colleges and schools of pharmacy, nursing, public health, and/or medicine who work in your area of interest may be beneficial for securing funding	

advanced practice providers (i.e., clinical pharmacists, nurses, and dietitians).

4 | RESEARCH TRAINING

To engage in health disparities research, pharmacists should obtain in-depth knowledge of the five SDOH domains described by Healthy People 2030: economic stability, education access and quality, health care access and quality, neighborhood and built environment, and social and community context.[2]

4.1 | Culture, diversity, equity, and inclusion training

Although clinical pharmacists are well trained to work in multidisciplinary teams in clinical environments, additional training in culture, diversity, equity, and inclusion is needed to effectively practice within disadvantaged communities. Available resources include the Pharmacy Quality Alliance SDOH Resource Guide,[13] the National Community Pharmacists Association Community Health Workers education module,[14] the National Academies of Sciences Resources on Diversity, Equity, and Inclusion (DEI),[15] the Agency for Healthcare Research and Quality researcher toolkit,[16] and culturally and linguistically appropriate services training.[16] Growing numbers of DEI fellowship programs offer opportunities in DEI (e.g., University of Florida and University of North Carolina). Moreover, health disparities research certificate programs exist at universities across the United States in addition to a foundational virtual course for health disparities research at the NIH National Institute on Minority Health and Health Disparities.[17] Developing, facilitating, and cooperating with regional and national health improvement collaboratives will help health systems and universities share best practices and accelerate data-informed improvements in care equity. In addition, a growing number of pharmacy residency programs have a defined focus on health equity and serving underserved populations (e.g., Purdue University, University of Pittsburgh Medical Center, and University of Cincinnati). Finally, comprehensive continuing education in these areas should be addressed by pharmacy organizations, healthcare facilities, and universities.

4.2 | Qualitative, mixed-methods, and community-based participatory research training

To grow proficiency in and access to these areas of research training, pharmacy practice sites should partner with local research organizations, nonprofit organizations, and colleges and schools of the humanities. Seeking mentorship from pharmacists who have gained these skills or collaborating with researchers who are proficient in these skills may afford early career pharmacists valuable experience and skill attainment. Further collaborations may lead pharmacists who are in early career or changing research focus at mid-career to serve as coinvestigators and be mentored in these areas of research. These collaborations with experienced research teams and scientists can allow pharmacists to leverage systems and resources that already exist. Professional organizations should also support research-based training programs incorporating these types of research methods. For example, the American College of Clinical Pharmacy (ACCP) Mentored Research Investigator Training (MeRIT) and Focused Investigator Training (FIT) programs[18] provide opportunities to support pharmacist-scientists with mentors familiar with qualitative, mixed-methods, and community-based participatory research (CBPR) training.

Training in qualitative and mixed-methods research is necessary if pharmacists are not collaborating with an expert in the area when addressing pernicious problems, including disparities in care, social and economic discrimination, and others mentioned in this call to action. These research types expand the scholarly tableau of pharmacists and allow for a deeper understanding of complex human

problems by asking the questions "how" and "why." For pharmacists engaged in this research, qualitative methods allow them to study health disparities while being engaged in the world and give them the tools needed to understand specific phenomena regarding the meanings people bring to them.[19]

CBPR represents a collaborative approach for community members, organizational affiliates, and researchers to equitably partner in research so that all can contribute their unique perspectives and expertise and share ownership and decision-making to improve the health and quality of life of the community.[20] Online and didactic training in community engagement can be found through various universities and clinical and translational sciences institutes (CTSIs) that are funded through the NIH Clinical and Translational Science Awards Program. Although many CTSIs are located at large, public research institutions, free online courses are also available, such as the Detroit Urban Research Center's CBPR Partnership Approach for Public Health.[21]

Access to qualitative research training is a significant need in pharmacy professional programs, including colleges and schools of pharmacy. Although this type of training is often offered at universities or in terminal degree programs, it is uncommon in colleges and schools of pharmacy. Furthermore, there is no consistent approach to or availability for this type of training within the profession of pharmacy.

4.3 | Quantitative training

Pharmacists should actively seek to engage with the communities they serve and be able to identify demographics and local health-related data in their communities using a population health perspective. Population health data can be found through tools such as PolicyMap[22]; however, understanding how to use the data is essential. Therefore, additional quantitative research training and mentoring in biostatistics and epidemiology may help prepare clinical pharmacists who use these large data sets in their research to understand the underpinnings of health and disease and how to alleviate or prevent diseases.[23] Collaborating with senior researchers or searching for mentoring from those with expertise in these areas may also help pharmacists acquire the skills necessary to lead and facilitate future research.

In addition to active community engagement, identifying local resource connections such as community health workers is paramount to conducting SDOH research. A more holistic integration and collaboration with the medical neighborhood may be beneficial to completing this research. Resources from multiple organizations focused on health equity, global health, health disparities, and cultural competency have created pharmacist networks to facilitate connection with and potentially creation and design of research (e.g., ACCP Health Equity PRN, ACCP Global Health PRN, American Association of Colleges of Pharmacy [AACP] Health Disparities and Cultural Competence SIG, AACP Public Health SIG, American Pharmacists Association Care of the Underserved SIG). Clinical pharmacists will need training on how to complete SDOH screenings, provide referrals, and conduct interventions in addition to addressing health literacy barriers through engagement in multilingual education.

5 | TYPES OF RESEARCH OPPORTUNITIES

The various types of health disparities research opportunities for clinical pharmacists can be subdivided into quality of care, access to care, use of care, and health outcomes. Comprehensive medication management may be used as the framework and provide the tools to manage chronic diseases in underserved populations. A primary care-focused pharmacist-researcher can leverage outcomes, metrics, and value for health disparities research. Table 3 outlines examples of research within each of these areas,[24–42] and we provide greater detail on each area in the text that follows.

5.1 | Quality of care

The three focused areas with the most opportunities to evaluate and influence quality of care are research on collaborative practice models, focused community/ambulatory care setting interventions, and cultural competency. Research evaluating the impact of collaborative practice models has consistently shown the role that clinical pharmacists can play in optimizing chronic patient care, including care within medically underserved and socially disadvantaged populations. For example, Anderegg et al. showed that a physician-pharmacist collaboration in the treatment of patients with hypertension can reduce racial and socioeconomic disparities in the treatment of blood pressure, with better blood pressure control in patients from racial minority groups and lower educational levels in the intervention than in the control groups.[28]

5.2 | Access to care

Two of the opportunities to evaluate and influence access to care focus on the clinical pharmacist's role and evaluation of gaps in patient care. For many years, focused research with pharmacists in the community and ambulatory care settings has demonstrated a positive impact on addressing access to care issues in populations of need. For example, Crawford et al. evaluated integrating and disseminating pre-exposure prophylaxis (PrEP) screening and dispensing for Black men who have sex with men in the community pharmacy setting.[32] This study added to the literature that PrEP interventions in the Black male population can be as feasible to implement as previous studies in the White male population and create an opportunity to increase PrEP access and reduce HIV incidence and racial inequalities in HIV.

5.3 | Use of care

Two opportunities to evaluate and influence use of care focus on SDOH and how SDOH affect both acute and chronic care and the impact of food insecurity and inadequate housing. Published literature indicates that SDOH contribute to almost 50% of health outcomes.[43]

TABLE 3 Clinical pharmacist health disparities research opportunities and examples.[24–42]

Areas/opportunities	Example: Evidence/research outcomes
Cultural competency	• Pharmacist-provided transgender health continuing education courses to pharmacists resulted in increased knowledge and comfort in communicating with and providing care to transgender patients[24]
Address vaccine hesitancy	• Pharmacist-led interventions increased flu vaccination rates among race/ethnic minority groups[25]
Optimize disease management and medication adherence	• Pharmacist-managed clinics using collaborative practice agreements significantly improved diabetes-related outcomes at an Army medical center and dyslipidemia outcomes at a veterans medical center compared with control groups (usual care)[26,27] • Among patients with racial and socioeconomic disparities, pharmacist interventions in team-based primary care settings significantly improved hypertension management, including treatment-resistant hypertension and diabetes management including preventive screenings[28–30] • Pharmacist-led management of chronic hepatitis C virus in patients taking medications for opioid use disorder resulted in higher rates of screening, treatment initiation, and treatment completion than conventional care[31]
Access to and affordability of prophylactic and screening services	• Community pharmacies involved in a pilot pharmacy-based PrEP delivery program for low-income and racial minorities LGBTQ+ (Lesbian, gay, bisexual, transgender, queer or questioning, "+" provides inclusion to signify sexual and gender minorities not otherwise represented) community demonstrated a feasible approach to increase PrEP screening and dissemination[32]
Telemedicine	• Systematic review of clinical pharmacist telemedicine interventions in the outpatient or ambulatory care setting demonstrated an overall positive impact on outcomes related to clinical disease management, patient self-management, and adherence in the management of chronic diseases[33,34]
Hospital discharge and transitions of care	• Pharmacist involvement with hospital care, medication reconciliation, and discharge medication planning can decrease medication discrepancies after discharge[35] • Pharmacist interventions combined with computerized hospital discharge orders can reduce prescription error rates[36] • Community pharmacists and advanced pharmacy practice experience-level student pharmacists delivering transitions-of-care programs have demonstrated the ability to significantly reduce hospital readmission rates[37]
Community involvement/ building trust and relationships in diverse communities	• Health promotion by barbers in collaboration with pharmacist assessment and medication management with Black men demonstrated improved blood pressure control rates[38] • A PrEP mobile messaging intervention demonstrated improved PrEP information delivery, improved motivation to use PrEP, and decreased stigma and barriers around the use of PrEP in Black men who have sex with men[39]
Patient lifestyle modifications	• Emergency food programs funded by the CDC have demonstrated successful sodium reduction interventions addressing food insecurity and improving access to health foods[40] • Community pharmacy-linked smoking cessation programs in homeless shelters have led to reduced tobacco use[41]
Harm reduction services	• Under a collaborative practice agreement, pharmacists provided medication management for patients with opioid use disorder and improved adherence to medications for opioid use disorder[42]

Abbreviations: CDC, Centers for Disease Control and Prevention; PrEP, pre-exposure prophylaxis.

Research focused on SDOH and their impact on patient care and outcomes continues to evolve and gain attention. Existing data have shown that individuals experiencing homelessness receive less preventive care, have lower adherence to medications, and have an increased use of acute emergency care.[44] Collaboration and integration of community pharmacy services in homeless shelters have shown benefits. For example, community pharmacist-delivered services, including smoking cessation counseling and prescribing and delivering nicotine replacement therapy, resulted in reduced tobacco use among those experiencing homelessness.[41]

5.4 | Health outcomes

Opportunities to evaluate and influence health outcomes include involvement in clinical trials at a home institution, collaboration as a coinvestigator on larger multicenter projects, focused research on diverse populations, and projects evaluating building trust and relationships in the community. In evaluating the impact of pharmacist-led interventions focused on blood pressure control at Black-owned barbershops, Victor et al. showed that health promotion by barbers paired with medication management by pharmacists resulted in significantly improved blood pressure control.[38]

6 | CONCLUSION

We have described how health disparities can affect quality of care, access to care, use of care, and health outcomes to highlight clinical pharmacists' opportunities to participate and lead in this area of research. In addition, we have highlighted training and funding opportunities available as a resource for clinical pharmacists to gain increased knowledge and abilities as they pertain to learning, designing, and implementing interventions to target health disparities. Finally, as a springboard for future interventions and areas of research, we have provided examples of various types of health

disparities research in which clinical pharmacists have demonstrated their impact.

CONFLICT OF INTEREST STATEMENT

Joel C. Marrs is a member of the JACCP editorial board. All other authors have no conflicts of interest to disclose.

ORCID

Joel C. Marrs https://orcid.org/0000-0003-0392-3866
Christine M. Formea https://orcid.org/0000-0001-7920-7087
Maha Abdalla https://orcid.org/0000-0002-5644-3383
Susie J. Crowe https://orcid.org/0000-0003-1421-4766
Megan C. Herink https://orcid.org/0000-0001-6402-0260
Alexander R. Hoffman https://orcid.org/0000-0002-5712-9038
Ann M. Philbrick https://orcid.org/0000-0003-0322-9532
Sara Shahdoost Moghadam https://orcid.org/0000-0002-5945-4205
Crystal Zhou https://orcid.org/0000-0002-0763-0721

REFERENCES

1. Agency for Healthcare Research and Quality (AHRQ). 2021 National healthcare quality and disparities report 2022. Available from: https://www.ahrq.gov/research/findings/nhqrdr/nhqdr21/index.html
2. U.S. Department of Health and Human Services Office of Disease Prevention and Health Promotion. Social determinants of health. Healthy People 2030. Available from: https://health.gov/healthypeople/priority-areas/social-determinants-health
3. Liu J, Brown J, Morton S, Potter DEB, Patton L, Patel M, et al. Disparities in diabetes and hypertension care for individuals with serious mental illness. *Am J Manag Care*. 2017;23:304–8.
4. Stepanikova I, Oates GR. Perceived discrimination and privilege in health care: the role of socioeconomic status and race. *Am J Prev Med*. 2017;52(1S1):86–94.
5. Gonzales KL, Lambert WE, Fu R, Jacob M, Harding AK. Perceived racial discrimination in health care, completion of standard diabetes services, and diabetes control among a sample of American Indian women. *Diabetes Educ*. 2014;40:747–55.
6. Leng B, Jin Y, Li G, Chen L, Jin N. Socioeconomic status and hypertension: a meta-analysis. *J Hypertens*. 2015;33:221–9.
7. Fang J, Yang Q, Ayala C, Loustalot F. Disparities in access to care among US adults with self-reported hypertension. *Am J Hypertens*. 2014;27:1377–86.
8. Forde AT, Sims M, Muntner P, Lewis T, Onwuka A, Moore K, et al. Discrimination and hypertension risk among African Americans in the Jackson Heart Study. *Hypertension*. 2020;76:715–23.
9. Benjamin EJ, Muntner P, Alonso A, Bittencourt MS, Callaway CW, Carson AP, et al. Heart disease and stroke statistics – 2019 update: a report from the American Heart Association. *Circulation*. 2019;139:e56–e528.
10. Pharmacist Professional Advisory Committee. Improving patient and health system outcomes through advanced pharmacy practice: a report to the US Surgeon General, 2011. Commissioned Corps of the U.S. Public Health Service. Revised September 27 2019. Available from: https://dcp.psc.gov/osg/pharmacy/sc_comms_sg_report.aspx.
11. Almarsdottir AB, Granas AG. Social pharmacy and clinical pharmacy–joining forces. *Pharmacy*. 2015;4:1.
12. MacKinnon GE III. Documentation: a value proposition for pharmacy education and the pharmacy profession. *Am J Pharm Educ*. 2007;71:73.
13. Pharmacy Quality Alliance (PQA). PQA social determinants of health resource guide. Available from: https://www.pqaalliance.org/sdoh-resource-guide
14. National Community Pharmacists Association (NCPA). Community health workers in community-based pharmacy care delivery. Available from: https://ncpa.thinkingcap.com/student/MyCourse.aspx?id=1cee70b3-eff1-4ac0-b3c1-2fb5606d762b&categoryid=&programid=87df19b2-5a29-44a8-8306-b397f45c2061&returnUrl=ContentPage.aspx?PageID=6ff12986-fed9-d3ec-e4b4-bf2f5305140d
15. National Academies of Sciences, Engineering, and Medicine (NASEM). Resources on diversity, equity, and inclusion. Available from: https://www.nationalacademies.org/topics/resources-on-diversity-equity-and-inclusion.
16. Agency for Healthcare Research and Quality (AHRQ). SDOH and health systems research 2021. Available from: https://www.ahrq.gov/sdoh/health-systems-research.html
17. National Institute on Minority Health and Health Disparities (NIMHD). Health Disparities Research Institute. Available from: https://www.nimhd.nih.gov/programs/edu-training/hdri/
18. American College of Clinical Pharmacy (ACCP). Investigator development. Available from: https://www.accpfoundation.org/investigator/index.aspx
19. Denzin NK, Lincoln YS. *The SAGE handbook of qualitative research*. Thousand Oaks, CA: SAGE Publications; 2018.
20. Israel BA, Eng E, Schulz AJ, Parker EA. Introduction to methods in community-based participatory research for health. In: Israel BA, Eng E, Schulz AJ, Parker EA, editors. *Methods in community-based participatory research for health*. 1st ed. San Francisco, CA: John Wiley & Sons; 2005. p. 3–26.
21. Detroit Urban Research Center. Online course on CBPR: a partnership approach for public health. Available from: https://www.detroiturc.org/about-cbpr/online-cbpr-course
22. Fu Y, Whitfield S, Nix T. PolicyMap: mapping social determinants of health. *Med Ref Serv Q*. 2017;36:266–72.
23. Columbia School of Public Health. What is epidemiology? 2020. Available from: https://www.publichealth.columbia.edu/public-health-now/news/what-epidemiology.
24. Rosa-Vega J, Carlo E, Rodríguez-Ochoa A, Hernández-Agosto J, Santiago Quiñones D, Cabrera-Candelaria D, et al. Educational intervention to improve pharmacist knowledge to provide care for transgender patients. *Pharm Pract*. 2020;18:2061.
25. Crawford ND, Blaney S, Amesty S, Rivera AV, Turner AK, Ompad DC, et al. Individual- and neighborhood-level characteristics associated with support of in-pharmacy vaccination among ESAP-registered pharmacies: pharmacists' role in reducing racial/ethnic disparities in influenza vaccinations in New York City. *J Urban Health*. 2011;88:176–85.
26. Wallgren S, Berry-Caban CS, Bowers L. Impact of clinical pharmacist intervention on diabetes-related outcomes in a military treatment facility. *Ann Pharmacother*. 2012;46:353–7.
27. Smith MC, Boldt AS, Walston DM, Zillich AJ. Effectiveness of pharmacy care management program for veterans with dyslipidemia. *Pharmacotherapy*. 2013;33:736–43.
28. Anderegg MD, Gums TH, Uribe L, Coffey CS, James PA, Carter BL. Physician-pharmacist collaborative management: narrowing the socioeconomic blood pressure gap. *Hypertension*. 2016;68:1314–20.
29. Smith SM, Carris NW, Dietrich E, Gums JG, Uribe L, Coffey CS, et al. Physician-pharmacist collaboration versus usual care for treatment-resistant hypertension. *J Am Soc Hypertens*. 2016;10:307–17.
30. Salvo MC, Brooks AM. Glycemic control and preventive care measures of indigent diabetes patients within a pharmacist-managed insulin titration program vs standard of care. *Ann Pharmacother*. 2012;46:29–34.
31. Radley A, de Bruin M, Inglis SK, Donnan PT, Hapca A, Barclay ST, et al. Clinical effectiveness of pharmacist-led versus conventionally delivered antiviral treatment for hepatitis C virus in patients receiving

opioid substitution therapy: a pragmatic, cluster-randomised trial. *Lancet Gastroenterol Hepatol*. 2020;5:809–18.
32. Crawford ND, Harrington KRV, Alohan D, Sullivan PS, Holland DP, Klepser DG, et al. Integrating and disseminating pre-exposure prophylaxis (PrEP) screening and dispensing for Black men who have sex with men in Atlanta, Georgia: protocol for community pharmacies. *JMIR Res Protoc*. 2022;11:e35590.
33. Niznik JD, He H, Kane-Gill SL. Impact of clinical pharmacist services delivered via telemedicine in the outpatient or ambulatory care setting: a systematic review. *Res Social Adm Pharm*. 2018;14:707–17.
34. Emmons RP, Harris IM, Abdalla M, Afolabi TM, Barner AE, Baxter MV, et al. Impact of remote delivery of clinical pharmacy services on health disparities and access to care. *J Am Coll Clin Pharm*. 2021;4:1492–501.
35. Farley TM, Shelsky C, Powell S, Farris KB, Carter BL. Effect of clinical pharmacist intervention on medication discrepancies following hospital discharge. *Int J Clin Pharmacol*. 2014;36:430–7.
36. Colombini N, Abbs M, Cherpin A, Bagneres D, Devos M, Charbit M, et al. Comprehensive evaluation of using computerized provider order-entry system for hospital discharge orders. *Int J Med Inform*. 2022;160:104703.
37. Shaver A, Morano M, Pogodzinski J, Fredrick S, Essi D, Slazak E. Impact of a community pharmacy transitions-of-care program on 30-day readmission. *J Am Pharm Assoc*. 2003;2019(59):202–9.
38. Victor RG, Lynch K, Li N, Blyler C, Muhammad E, Handler J, et al. A cluster-randomized trial of blood-pressure reduction in black barbershops. *N Engl J Med*. 2018;378:1291–301.
39. Rouffiac AE, Whiteley L, Brown L, Mena L, Craker L, Healy M, et al. A mobile intervention to improve uptake of pre-exposure prophylaxis for southern Black men who have sex with men: protocol for intervention development and pilot randomized controlled trial. *JMIR Res Protoc*. 2020;9:e15781.
40. Strazza K, Jordan J, Ferriola-Bruckenstein K, Kane H, Whitehill J, Teachout E, et al. Approaches for implementing health food interventions in settings with limited resources: a case study of sodium reduction interventions in emergency food programs addressing food insecurity. *Am J Health Promot*. 2022;36:487–96.
41. Johnsen S, Cuthill F, Blenkinsopp J. Outreach-based clinical pharmacist prescribing input into the healthcare of people experiencing homelessness: a qualitative investigation. *BMC Health Serv Res*. 2021;21:7.
42. Mailloux LM, Haas MT, Larew JM, DeJongh BM. Development and implementation of a physician-pharmacist collaborative practice model for provision and management of buprenorphine/naloxone. *Ment Health Clin*. 2021;11:35–9.
43. Kostelanetz S, Pettapiece-Phillips M, Weems J, Spalding T, Roumie C, Wilkins CH, et al. Health care professionals' perspectives on universal screening of social determinants of health: a mixed-methods study. *Popul Health Manag*. 2022;25:367–74.
44. Hartman-Filson M, Chen J, Lee P, Phan M, Apollonio DE, Kroon L, et al. A community-based tobacco cessation program for individuals experiencing homelessness. *Addict Behav*. 2022;129:107282.

How to cite this article: Marrs JC, Formea CM, Abdalla M, et al. Call to action: Clinical pharmacist roles and opportunities in health disparities research. *J Am Coll Clin Pharm*. 2023;6(3): 297-304. doi:10.1002/jac5.1764