



Community health advisors assessing adherence to national cancer screening guidelines among African Americans in South Los Angeles

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ABSTRACT

We partnered with African American churches in South Los Angeles (LA) and trained Community Health Advisors (CHAs) to assess cancer screening. The purpose of this analysis is to report adherence to national cancer screening guidelines among African Americans in South LA, to assess relationships between adherence to colorectal cancer and other cancer screening guidelines, and to explore regional differences in screening rates.

Between 2016 and 2018, 44 CHAs surveyed 777 African Americans between 50 and 75 years of age. Among 420 South LA residents, 64% of men and 70% of women were adherent to colorectal cancer screening guidelines. Adherence to mammography screening guidelines was 73%. Adherence to cervical cancer screening guidelines among women 50 to 65 years of age without hysterectomy was 80%. Fifty-nine percent of men had ever discussed the Prostate Specific Antigen (PSA) test with a physician. Adherence to colorectal cancer screening guidelines was significantly higher among respondents who were adherent to other cancer screening guidelines compared to their peers who were not adherent to other cancer screening guidelines (all $p < 0.05$). The fact that 22% of women who were adherent to breast cancer screening, 32% of women adherent to cervical cancer screening and 16% of men who had discussed the PSA test with a physician were *not* adherent to colorectal cancer screening guidelines suggests that providers should redouble their efforts to review *all* screening guidelines with their patients and to make appropriate recommendations. Regional differences in screening rates within South Los Angeles should inform future screening promotion efforts.

1. Introduction

South Los Angeles (LA) has a population of more than 1 million residents and is comprised of several distinct neighborhoods and 26 different zip codes. Its boundaries are closely aligned with Service Planning Area (SPA) 6 of LA County. The cities of Hawthorne and Inglewood in SPA 8 have health statistics similar to the cities in SPA 6, but are commonly considered as South LA by the public (Community Health Councils, 2008). While the majority of residents are Latino (68%), South LA also has a high concentration of African American residents, 27% of the population, compared to an average of 8% in California. A large proportion of households in South LA live below the federal poverty level (33% compared to 18% in LA County). Cancer mortality rates in South LA are among the highest in the county for breast, cervical and colorectal cancer (Los Angeles County Department

of Public Health, 2017b). In addition, African Americans have the highest mortality and the shortest survival of any racial/ethnic groups in the US for most cancers (American Cancer Society, 2019).

Causes of cancer disparities are complex and include interrelated social, economic, cultural and health system factors (Daly and Olopade, 2015; Yedjou et al., 2017). The U.S. Preventive Services Task Force has issued national cancer screening guidelines in order to reduce cancer mortality (U.S. Preventive Services Task Force, 2020). In addition, the Healthy People initiative develops science-based national objectives, including targets for the proportion of people screened according to the national guidelines, with the goal of improving the health of all Americans (Office of Disease Prevention and Health Promotion, 2020). However, screening rates tend to be lowest among men and women with low levels of income and education, who often lack access to health care and face barriers to screening, such as lack of

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transportation, no time, lack of knowledge of screening guidelines, and lack of physician recommendation (Alexandraki and Mooradian, 2010; Jones et al., 2010). These low screening rates contribute to cancer disparities (Lansdorp-Vogelaar et al., 2012).

The African American community has experienced a long history of discriminatory healthcare practices and unethical medical research. As a result, many African Americans regard research with suspicion and are hesitant to participate in health surveys or clinical trials (Buseh et al., 2013; Prather et al., 2018). Churches are an important asset in this community. African Americans are more likely than any other racial/ethnic group to say that religion is very important in their life (75% compared to 49% Whites) and are most likely to attend religious services at least once a week (47% compared to 34% Whites). Weekly attendance is even higher among 50 to 64 year olds (52%) and among 65 year olds and older (69%) (Pew Research Center, 2014). Many African American churches have a health ministry in order to address physical needs in addition to administering to the spiritual needs of their congregation (Maynard, 2017; Rowland and Isaac-Savage, 2014). This approach is consistent with the Social Ecological Framework, which recognizes that individuals are part of families that belong to organizations and social groups, live in neighborhoods and communities, and are influenced by broad environmental cultural and social forces (Green et al., 2001; Trickett et al., 2011).

Churches often conduct health programs through community health advisors (CHAs), trained lay people who are well known, respected and trusted by other church members. This trusting relationship enables CHAs to conduct outreach, community education, and counseling, to distribute health information, make referrals, serve as role models and collect data (Allen et al., 2014; Holt et al., 2011; Leone et al., 2016; Maxwell et al., 2013).

We conducted a study in partnership with African American churches to promote cancer screening in South LA. As part of the study, African American CHAs assessed cancer screening among adults between 50 and 75 years of age. The purpose of this analysis is to report adherence to national cancer screening guidelines among African Americans residing in South LA. We also assessed relationships between adherence to colorectal cancer screening guidelines and receipt of other cancer screening tests, and explored regional differences in screening rates within South LA in order to inform future interventions for this community.

2. Methods

Between 2016 and 2017, our research team of academic faculty and community leaders approached 11 African American churches in South LA with an invitation to participate in a study to promote cancer screening in their community. Of the nine churches that decided to participate, seven were located in six South LA zip codes and two churches were located in zip codes adjacent to South LA (see Fig. 1). The study protocol included two 4-hour workshops at each church to train church volunteers to serve as CHAs. Their tasks included recruiting at least 10 study participants between 50 and 75 years of age within a 12-month period and assessing their adherence to national cancer screening guidelines. CHAs received training on Human Subjects Protection rules and obtained verbal informed consent prior to conducting the assessment. They received information on cancer screening guidelines issued by the US Preventive Services Task Force and practiced administering the one-page assessment using demonstration and role play. Each participating church received a \$2,000 stipend and CHAs received up to \$500 in stipends to incentivize their participation in this assessment and subsequent efforts to promote cancer screening among non-adherent participants, reported in (Maxwell et al., 2019).

As described in more detail elsewhere (Maxwell et al., 2020), CHAs were between 49 and 82 years of age, 84% were female, 54% had a professional background in a health-related field and 81% of CHAs in the 7 South LA churches resided in South LA. An evaluation of the

training workshops showed increased knowledge and perceived self-efficacy to serve as CHA.

CHAs conducted the vast majority of the assessments in person at church or elsewhere in the community and a few assessments of distant relatives or friends by phone. The one-page assessment collected the following information: name, gender, age, address; receipt (ever had and when was the last test) of mammograms, Pap tests, Human Papilloma Virus (HPV) tests (women only), stool blood tests, sigmoidoscopy and colonoscopy. Men were asked if they ever had a Prostate Specific Antigen (PSA) test and if they had ever discussed the PSA test with a physician. Survey items were similar to those used in large population surveys, such as the Behavioral Risk Factor Surveillance System (Centers for Disease Control and Prevention, n.d.). CHAs read out lay-language definitions of the screening tests when needed. Each assessment took about 10 min to complete. The study protocol was approved by the University of California Los Angeles Institutional Review Board.

2.1. Statistical analysis

Analyses were conducted using SAS 9.4. The analytic sample included a total of 420 respondents between 50 and 75 years of age who resided in South LA. Following national cancer screening guidelines (U.S. Preventive Services Task Force, 2020), respondents who reported a stool blood test within the last 12 months or a sigmoidoscopy within the last 5 years or a colonoscopy within the last 10 years were categorized as adherent to colorectal cancer screening guidelines. Adherence to mammography screening (last mammogram within the past 2 years) was computed only for women between 50 and 75 years who did not have a mastectomy (N = 268). Adherence to cervical cancer screening (Pap test within the past 3 years or Pap and HPV test within the past 5 years) was computed only for women between 50 and 65 years who did not have a hysterectomy (N = 137). We conducted chi-square tests to compare receipt of colorectal cancer screening and overall adherence to all cancer screening guidelines between males and females and to test for associations between adherence to colorectal cancer screening guidelines and other cancer screening guidelines.

3. Results

Between June 2016 and June 2018, 44 CHAs from 9 of the 11 churches that were invited to participate recruited a total of 777 study participants and conducted a one page assessment with each participant. Of these, 420 African American participants resided in South LA, 152 men and 268 women. By design, the age of the sample ranged from 50 to 75 years. On average, men were 2 years younger than women (60.9 + 6.7 versus 62.8 + 7.2 years, $p < 0.01$, 2 sample *t*-test). To reduce respondent burden, we did not request CHAs to collect any other demographic characteristics of study participants. However, a subsample that answered additional questions during the course of the study (N = 253) was 95% insured and 87% stated that they had a regular physician (Maxwell et al., 2019).

3.1. Cancer screening rates

As shown in Table 1, more than 40% of men and women reported that they ever had a stool blood test, but less than 20% had one in the last 12 months. Women were significantly more likely than men to report a history of sigmoidoscopy and colonoscopy. Overall, 64% of men and 70% of women were adherent to colorectal cancer screening guidelines, with women but not men almost achieving the Healthy People 2020 target of 70.5%. Adherence to mammography screening guidelines was 73% and adherence to cervical cancer screening guidelines among women 50 to 65 years of age without hysterectomy was 80%. Both of these rates are about 10 percentage points lower than the Healthy People 2020 targets. Only 45% of women between 50 and

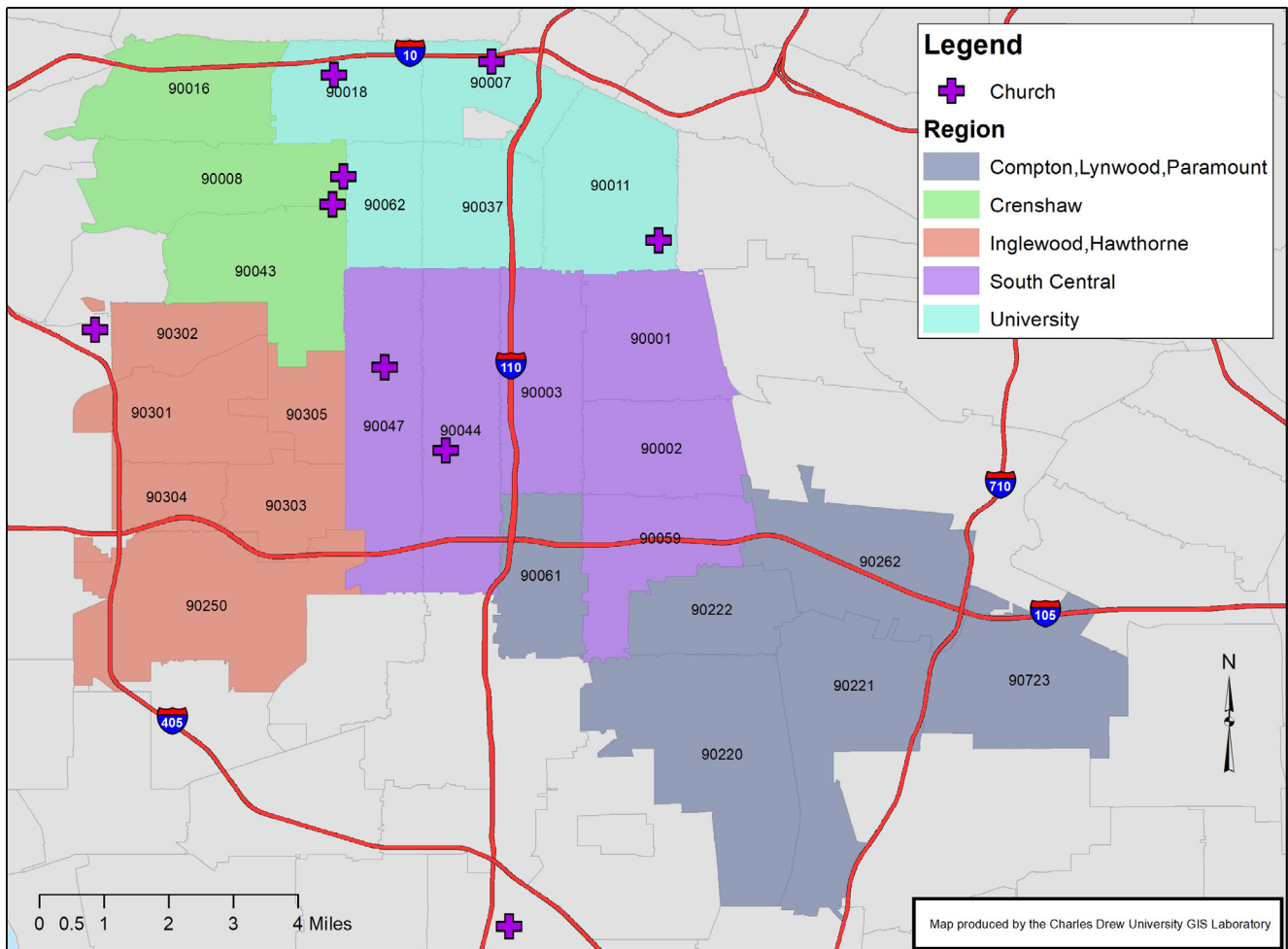


Fig. 1. South Los Angeles regions (Community Health Councils, 2008) and locations of collaborating churches, 2016–2018.

65 years reported that they had ever had an HPV test. Sixty-two percent of men had ever received a PSA test and 59% had discussed the test with a physician, exceeding the 2020 target for men of all racial/ethnic

groups. With respect to adherence to *all* screening guidelines, 50% of men were adherent to colorectal cancer screening guidelines *and* had discussed the PSA test with a provider; and 55% of women were

Table 1

Self-reported cancer screening among African Americans in South Los Angeles, 2016–2018 (N = 420).

Cancer Screening Test	Males (N = 152)		Females (N = 268)		P-value	Healthy People 2020 Targets ³
	n/N	%	n/N	%		
Ever had a stool blood test	64/152	42%	121/268	45%	NS	
Adherent to stool blood test guidelines (had test in the last 12 months)	29/152	19%	45/268	17%	NS	
Ever had sigmoidoscopy	14/152	9%	43/268	16%	< 0.05	
Adherent to sigmoidoscopy screening guidelines (had test in the last 5 years)	6/152	4%	10/268	4%	NS	
Ever had a colonoscopy	88/152	58%	189/268	71%	< 0.01	
Adherent to colonoscopy screening guidelines (had test in the last 10 years)	78/152	51%	165/268	62%	< 0.05	
Adherent to colorectal cancer screening guidelines	97/152	64%	187/268	70%	NS	70.5%
Ever had a mammogram			257/268	96%		
Adherent to mammography screening guidelines (had test in the last 2 years)			195/268	73%		81.1%
Ever had a Pap test ¹			129/137	94%		
Ever had a HPV test ¹			62/137	45%		
Adherent to cervical cancer screening guidelines ^{1,2}			109/137	80%		93.0%
Ever received a Prostate Specific Antigen (PSA) test	94/152	62%				
Ever discussed PSA test with doctor	89/152	59%				15.9%
Adherent to all cancer screening guidelines plus discussed PSA test with MD (men only)	76/152	50%	147/268	55%	NS	

¹Only reported for women up to 65 years of age who did not have a hysterectomy (N = 137), following the national cancer screening guidelines, U.S. Preventive Services Task Force, August 2018 (<https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/cervical-cancer-screening2?ds=cancer%20screening>, accessed 10/2/2018).

²Had a Pap test within the past 3 years or a Pap and HPV test in the past 5 years.

³<https://www.healthypeople.gov/2020/topics-objectives/topic/cancer/objectives>, accessed 1/24/2019.

Table 2
Geographic distribution of African American respondents in South Los Angeles and adherence to cancer screening guidelines (N = 420), with zip code demographic data.

South Los Angeles Neighborhood (number of respondents)	Zip Codes	Zip code demographic data ¹				% adherent to guideline ²
		Population	% African American	Median Household Income (\$)	% persons below FPL in past 12 months	
Inglewood/Hawthorne (N = 70)	90301	37,302	32.7	42,100	20.4	61%
	90302	30,744	48.7	43,788	20.7	
	90303	24,658	37.2	44,470	23.3	
	90304	25,908	3.8	41,054	24.3	
	90305	15,561	79.0	68,760	9.2	
	90250	97,046	26.6	49,417	16.4	
Total/Weighted Averages		231,219			18.8	
Crenshaw (N = 118)	90008	32,351	69.8	36,641	22.3	55%
	90016	46,195	34.7	43,443	22.2	
	90043	44,342	61.8	41,812	21.2	
Total/Weighted Averages		122,888			21.9	
South Central (N = 154)	90001	58,731	9.6	35,660	31.9	51%
	90002	52,856	22.1	34,000	33.8	
	90003	70,490	22.7	34,397	33.1	
	90044	94,571	35.6	32,278	34.6	
	90047	48,437	66.2	42,551	20.0	
	90059	47,143	32.0	37,653	34.7	
Total/Weighted Averages		372,228			31.9	
University (N = 49)	90007	41,217	11.8	23,070	46.5	49%
	90011	107,888	8.8	33,824	36.2	
	90018	51,828	32.7	37,341	25.0	
	90037	63,127	18.9	31,045	37.2	
	90062	33,605	34.2	40,018	23.2	
	Total/Weighted Averages		297,665			
Compton/Lynwood/Paramount (N = 29)	90061	27,849	33.5	37,126	31.2	41%
	90220	51,690	38.1	54,014	19.5	
	90221	54,232	21.8	46,008	23.7	
	90222	32,497	28.0	40,719	26.6	
	90262	68,925	8.7	45,897	22.7	
	90723	54,720	9.8	49,064	20.3	
Total/Weighted Averages		289,913			23.1	
TOTAL						53%

¹ Source

U.S. Census Bureau, American Fact Finder, 2013–2017 American Community Survey 5-Year Estimates.

² Women

adherent to colorectal and breast cancer screening guidelines for women 50–75 years old and adherent to cervical cancer screening guidelines for women 50–65 years old without hysterectomy.

Men

adherent to colorectal cancer screening guidelines and had discussed PSA test with a provider.

FPL = Federal Poverty Level.

adherent to screening guidelines for breast, cervical and colorectal cancer.

Table 2 shows the geographic distribution of South LA respondents in 5 South LA regions and their adherence to all cancer screening tests. Adherence to screening guidelines tended to be higher in zip codes with higher household income. For example, in Inglewood/Hawthorne, median household income ranges from \$41,054 to \$68,760, 18% of the population lived below 100% federal poverty level in the last 12 months and 61% of our respondents from this region were adherent to all cancer screening guidelines. In contrast, in University, median household income ranges from \$23,070 to \$40,018, 34.4% of the population lived below 100% federal poverty level in the last 12 months and only 49% of our respondents from this region were adherent to all cancer screening guidelines. The values for Crenshaw and South Central lie in between these two extremes (55% and 51% of the sample were adherent to all screening tests), with median household income ranging from \$32,278 to \$43,443. Due to the small sample from Compton/Lynwood/Paramount, the estimate for this region may not be stable. The sample includes participants from all 26 South LA zip codes. Each church recruited participants from between 6 and 20 South LA zip codes.

As shown in Table 3, adherence to colorectal cancer screening guidelines was significantly higher among respondents who were

adherent to other cancer screening guidelines compared to their peers who were not adherent to other screening guidelines (all $p < 0.05$). For example, adherence to colorectal cancer screening guidelines was significantly higher among women who were adherent to breast cancer screening guidelines than among non-adherent women, 78% versus 48%, a 30 percentage point difference ($p < 0.0001$). Adherence to colorectal cancer screening guidelines was significantly higher among men who had ever discussed PSA testing with a provider than among men who had never discussed the PSA test, 84% versus 35%, a 49 percentage point difference ($p < 0.0001$). However, 22% of women who were adherent to breast cancer screening, 32% of women adherent to cervical cancer screening and 16% of men who had discussed a PSA test with a provider were not adherent to colorectal cancer screening guidelines.

4. Discussion

4.1. Lessons learned partnering with churches and CHAs

CHAs from 9 churches leveraged their relationships with church members to recruit a large sample of African American research participants from the entire South LA area, although participating churches were located in only three of the five regions in South LA. This is

Table 3

Relationship between adherence to guidelines for colorectal cancer screening and receipt of other cancer screening tests among African Americans living in South Los Angeles (N = 420), 2016–2018.

	Adherent to colorectal cancer screening guidelines		Not adherent to colorectal cancer screening guidelines		p-value ²
	n/N	%	n/N	%	
Adherence to breast cancer screening guidelines					
Yes	152/195	78%	43/195	22%	< 0.0001
No	35/73	48%	38/73	52%	
Adherence to cervical cancer screening guidelines ¹					
Yes	74/109	68%	35/109	32%	< 0.05
No	12/28	43%	16/28	57%	
Ever had a Prostate Specific Antigen test (PSA)					
Yes	73/94	78%	21/94	22%	< 0.0001
No	24/58	41%	34/58	59%	
Ever discussed PSA test with MD					
Yes	75/89	84%	14/89	16%	< 0.0001
No	22/63	35%	41/63	65%	

¹Only reported for women 50 to 65 years of age who did not have a hysterectomy (N = 137).

²Chi-square test.

because CHAs recruited members of their own personal networks in addition to church members. In addition, African Americans in LA tend to remain with their church even if they move to another area of town. In fact, five of the churches in our study described themselves as “commuter churches”, in which 40–80% of their members usually come for worship but not for other activities because they do not live in close proximity to the church.

Although we tried to make the assessment short and concise, and included the guidelines for each screening test on the assessment form, a few CHAs found it difficult to determine adherence to colorectal cancer screening guidelines. The fact that there are three different tests available, each with a specific periodicity, and that participants only needed one of these tests was confusing. A few CHAs also had problems determining adherence to prostate cancer screening recommendations. Many CHAs were aware of community organizations promoting PSA testing among African American men. Therefore, it was confusing for them that somebody who had discussed the PSA test with a physician was considered adherent to the national prostate cancer screening guideline (which advocates for informed decision making rather than PSA testing), regardless of whether or not they had ever received a PSA. To address this problem, we conducted regular debriefings in which we reviewed individual assessments and the national screening guidelines with each CHA. In addition, each assessment was reviewed by at least two members of the research team to determine adherence to screening guidelines for each participant.

4.2. Adherence to national cancer screening guidelines

Our data confirm that South LA is a high priority area for promoting cancer screening. Although the proportion of African American women who *ever* had a mammogram or a Pap test was very high, a substantial proportion did not obtain the tests in the time intervals recommended by the national cancer screening guidelines and therefore screening rates did not meet Healthy People 2020 targets. HPV co-testing was especially low in our sample, which may be due to lack of knowledge of the test and lack of awareness that a provider may have done this test during a Pap test. Compared to African American women who participated in the LA County Health Survey that interviewed a random representative sample of 8,008 adults (88% adherent to breast and 89% to cervical cancer screening guidelines (Los Angeles County Department of Public Health, 2017a), our South LA sample had much lower screening rates (73% adherent to breast and 80% to cervical cancer screening guidelines).

On a more positive note, a relatively large proportion of both men and women in South LA, 17% to 19%, utilized stool blood testing,

which is a low-cost but frequently underutilized option for colorectal cancer screening. Similar to our findings, almost 25% of African Americans reported a stool blood test in the past 12 months in the 2013 California Behavioral Risk Factor Surveillance System (California Department of Public Health, 2016), although other surveys report that less than 10% of adults obtained this test within the past 12 months, e.g., (de Moor et al., 2018). As stated by the National Colorectal Cancer Roundtable, the best colorectal cancer screening test is the test that gets done (Gupta et al., 2014) – speaking to the importance of promoting stool blood tests in this community that may be hesitant to opt for the more expensive colonoscopy.

The proportion of men who had discussed the value of PSA testing with a provider exceeded the 2020 target, probably due to the fact that African Americans have the highest risk for prostate cancer of any ethnic/racial group in the United States (Shenoy et al., 2016), and because a number of community organizations promote PSA testing and discussion among African Americans in South LA. The fact that only about half of the sample was adherent to all guidelines for the screening tests that we assessed suggests that there is a lot of room to improve screening rates in this underserved and under-resourced community.

Within South LA, we also found substantial differences in screening rates among different regions, generally consistent with social determinants of health such as economic stability (Marmot et al., 2008). For example, residents from Inglewood, Hawthorne and parts of Crenshaw tended to have higher screening rates than residents in University. In addition to higher income levels, these neighborhoods may benefit from resources from adjacent cities in the west.

Adherence to colorectal cancer screening guidelines was significantly higher among women who were adherent to breast or cervical cancer screening guidelines and among men who had a PSA test or had discussed the value of a PSA test with a physician as compared to their peers who did not have these screening tests. These findings are consistent with previous studies (Guerrero-Preston et al., 2008; Wirth et al., 2014) and suggest that screening for other cancers can serve as “teachable moments” to promote colorectal cancer screening (Carlos et al., 2004). Our findings confirm the importance of patient-provider communication for improving screening rates (Peterson et al., 2016). The fact that a substantial proportion of participants were *not* adherent to colorectal cancer screening guidelines despite being adherent to screening guidelines for other cancers suggests that providers should redouble their efforts to review *all* screening guidelines with their patients and to make appropriate recommendations and referrals.

Our findings suggest that additional efforts to promote cancer screening in South LA are needed. In a prior study with 800 African Americans that was also conducted in partnership with South LA

churches (Lucas-Wright et al., 2014), the main barriers for not obtaining cancer screening tests were “never thought about it”, “doctor did not tell me I needed it” and “put it off”. Trained CHAs can address these barriers as part of health ministry outreach and health promotion (Davis et al., 1994; Erwin, 2002; Erwin et al., 2003; Markens et al., 2002). A recent review article concluded that church-based cancer education programs are promising and can lead to positive effects with respect to cancer knowledge, beliefs and screening behaviors (Hou and Cao, 2017). There is growing consensus that CHAs can improve access to care and help to eliminate health disparities among under-resourced populations (Balcazar et al., 2011). CHAs that are integrated in community settings such as churches, barbershops and beauty salons have the potential to reach community members who do not see a physician on a regular basis, increase awareness of the importance of screening and encourage them to discuss screening with their provider.

4.3. Limitations

Our study had several limitations. Our convenience sample of participants may not be representative of all African Americans in South LA and church attendees may be more adherent to cancer screening guidelines than their peers who do not attend church (Leyva et al., 2015). Very few of the CHAs completed refusal logs but overall, CHAs reported that fewer than 10% of people they approached refused to participate. Although CHAs were able to recruit a large number of African Americans from all 26 zip codes in South LA, few residents from Compton, Lynwood and Paramount participated. Since residents in this region were least adherent to screening guidelines, this region needs to be included in future efforts to promote screening.

Self-reported cancer screening and time of last cancer screening test may suffer from social desirability bias and telescoping (e.g., tests were recalled as having occurred more recently than was the case) (McGovern et al., 1998). This may lead to over-estimates of adherence rates. On the other hand, some respondents may have been unaware or may not remember that they had a cancer screening test in the past, especially if their provider performed a PSA test during routine blood monitoring or an HPV test during a Pap test. This would lead to under-reporting. We did not assess if colonoscopies were conducted for screening or diagnostic purposes. In addition, the U.S. Preventive Services Task Force screening guidelines are intended for individuals with average risk and may not apply to respondents who have an increased cancer risk.

4.4. Conclusions

Trained church volunteers were able to assess cancer screening in a large number of African Americans residing in South LA. Only about 50% of men and 55% of women were up to date with all recommendations for breast, cervical, and colorectal cancer screening and with discussion of PSA testing with a provider. With the exception of colorectal cancer screening among African American women, this population does not meet the Healthy People 2020 targets for breast, cervical and colorectal cancer screening. Regional differences within South LA are consistent with social determinants of health. These findings call for additional efforts to promote cancer screening in this community.

CRedit authorship contribution statement

Annette E. Maxwell: Conceptualization, Methodology, Investigation, Supervision, Project administration, Writing - original draft. **Aziza Lucas-Wright:** Conceptualization, Methodology, Investigation, Supervision, Writing - review & editing. **Juana Gatson:** Investigation. **Claudia Vargas:** Investigation, Data curation. **Rhonda E. Santifer:** Investigation. **L. Cindy Chang:** Data curation, Formal analysis. **Khoa Tran:** Data curation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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