Heat-Health Behavior Change During Summer 2020 in African American Alabama Residents

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To investigate how heat-health behaviors changed in summer 2020 compared with previous summers, our community–academic partnership conducted telephone surveys to collect data on cooling behaviors, safety concerns, and preferences for cooling alternatives for 101 participants living in Alabama. Participants indicating they would visit cooling centers declined from 23% in previous summers to 10% in summer 2020. The use of cooling centers and other public spaces may be less effective in reducing heat-related illness because of safety concerns amid the COVID-19 pandemic and police brutality. (*Am J Public Health*. 2021;111(8):1443–1447. https://doi.org/10.2105/AJPH.2021.306365)

The ongoing COVID-19 pandemic may lead to an increased risk of heat-related illness. Heat-related illness risk mitigation strategies before the COVID-19 pandemic—the use of cooling centers and public outdoor recreational areas (e.g., swimming pools, lakes, water parks)—may be used less because of closures and the perception of an increased risk of contracting COVID-19.[1] Additionally, police brutality cases in 2020 may have changed people's perception of the safety of visiting public cooling spaces and of seeking medical attention if experiencing heat-related symptoms, potentially increasing the risk of heat-related illness.[2] Although staying at home may reduce the risk of contracting COVID-19 and alleviate safety concerns, the lack of at-home air conditioning, high electricity bills, or heat-related electrical blackouts may hinder people from staying cool at home in hot weather.[1,3] Loss of jobs, supply chain disruption, increased isolation, and restricted health care access during the pandemic may also increase the risk of heat-related illness.[1,3,4]

INTERVENTION

As part of our community–academic partnership—ENACT (www.enactalabama.org)—Friends of West End and West Central Alabama Community Health Improvement League conducted telephone surveys in an urban location (City of Birmingham) and a rural location (Wilcox County) in Alabama to determine how residents' heat-health behaviors changed in summer 2020 compared with previous summers and to relay heat-health mitigation strategies before forecasted extreme heat events.

PLACE AND TIME

We conducted the telephone surveys in the City of Birmingham and Wilcox County, Alabama, in July through September 2020.

PERSON

We recruited and enrolled participants from the established networks of Friends of West End and West Central Alabama Community Health Improvement League. Forty-nine urban participants and 52 rural participants completed the baseline survey, and 48 of the 49 urban participants and 52 of the 52 rural participants completed the follow-up telephone survey. The mean age of participants was 52 years, 84% identified as female, and all identified as Black or African American (Table A, available as a supplement to the online version of this article at http://www.ajph.org). The high proportion of female participants reflects our established networks from previous studies, in which females were more willing to participate.[5]

Rural and urban participants were comparable in age, sex, education level, annual household income level, and general health conditions. Participants generally reflected reported US Census

demographics in the 2 sampled locations based on age and education (percentage who were aged 65 years and older and percentage with high school diploma or higher among persons aged 25 years and older) and overrepresented persons identifying as Black or African American and female and having lower household income (Table B, available as a supplement to the online version of this article at http://www.ajph.org).

PURPOSE

The purpose of the telephone survey was to mobilize our established community–academic partnership to examine whether and how participants' heat-health behaviors changed because of COVID-19 and recent police brutality in summer 2020 compared with previous summers and to relay pandemic-safe heat-health strategies before a forecasted extreme heat event.[6,7]

IMPLEMENTATION

We designed the initial and follow-up surveys based on Centers for Disease Control and Prevention and World Health Organization heat-health guidance.[6,8] Friends of West End and West Central Alabama Community Health Improvement League completed telephone calls using a script (https://bit.ly/3w28WsG). In the initial survey, participants self-reported the use of 8 heat-health mitigation strategies in previous summers and their anticipated use of those same strategies in summer 2020. We conducted follow-up surveys when weather forecasts predicted "danger" or "extreme danger" heat index categories by the National Weather Service over the upcoming week, and we asked participants to report their willingness to use each of the 8 heat-health mitigation strategies during the upcoming forecasted heatwave. We completed the initial telephone surveys in June and July 2020 and the follow-up telephone surveys through September 2020.

EVALUATION

Table 1 reports the key results on heat-health behavior change, with each participant serving as their own control. Fewer participants reported that they would use air-conditioned public spaces (e.g., malls, stores, libraries, recreation centers, churches) in summer 2020 compared with previous summers (23 participants [23%] in previous summers vs 10 participants [10%] in summer 2020; $P = .02$). Most participants reported that they had used or would use fans, close curtains or blinds, and check in with friends and family on hot days in previous summers and would do so in summer 2020. In urban participants only, a higher percentage of participants reported that they would open windows to cool down the house in summer 2020 compared with previous summers. In summer 2020, 77% of participants reported that they would seek medical attention if feeling too hot or dehydrated. A significantly higher percentage of urban participants reported that they had used or would use, if open, cooler air-conditioned public spaces, public swimming pools, or recreational areas compared with rural participants in previous years and 2020. It is important to note that most parks, recreation areas, and swimming pools were closed during survey implementation and, for example, City of Birmingham swimming pools are still closed as of early June 2021. A higher percentage of rural participants reported fan use compared with urban participants in previous summers (43 rural participants [83%] vs 25 urban participants [51%]; $P \leq .001$).

A total of 25 rural participants (48%) and 18 urban participants (37%) reported that the recent cases of police brutality had changed their perception of safety for visiting public spaces or recreational areas (Table C [available as a supplement to the online version of this article at http://www.ajph.org]). Forty-three participants (43%) felt less safe. One participant explained, "[I am] afraid that something bad might happen, and I might get caught up in it." Thirty-nine participants (39%) reported that the recent cases of police brutality changed their trust in local emergency management or health care providers. One participant explained, "[The police brutality] seems like it has gotten worse." Another said, "[It] depend[s] on how ill the person is. It's danger[ous] going to [the] ER at night. I would do my best to figure out what to do in case of an emergency at night." Two participants (2%) reported that their or their family's or friends' health was affected by other aspects of the recent cases of police brutality. One participant explained, "[I have a] lack of trust for . . . police officer[s]. [There have been] too many unsolved death(s) that have occurred from the hand of police officers." We did not find urban–rural differences in these safety concerns.

Most participants (95%) in both locations felt that they had been able to stay cool so far in summer 2020 upon completion of the initial survey. However, during the follow-up survey conducted through August and September 2020 before particularly hot weather was forecasted, 21 rural participants (40%) and 17 urban participants (35%) had concerns that they would not be able to stay cool in upcoming hot weather that had been forecasted. Uncertain air-

TABLE 1— Participants' Heat-Health Behaviors in Previous Summers and Summer 2020

	Participant No. (%) Reporting Use in Previous Summers	Participant No. (%) Reporting Use in Summer 2020	*P*[a]
Use cooler air-conditioned public spaces (e.g., malls, stores, libraries, recreation centers, or churches)			
Both rural and urban	23 (23)	10 (10)	.02
Rural	6 (12)	2 (4)	.27
Urban	17 (35)	8 (16)	.06
P[b]	.01	.047	. . .
Use public swimming pools or outdoor recreational areas (e.g., lakes, rivers, water parks)			
Both rural and urban	17 (17)	13 (13)	.56
Rural	2 (4)	3 (6)	> .99
Urban	15 (31)	10 (20)	.35
P[b]	≤ .001	.04	. . .
Worry about not being able to keep cool owing to high cost of air conditioning			
Both rural and urban	45 (45)	43 (43)	.89
Rural	22 (42)	21 (40)	> .99
Urban	23 (47)	22 (45)	> .99
P[b]	.69	.69	. . .
Open windows to cool down the house			
Both rural and urban	20 (20)	32 (32)	.08
Rural	9 (17)	12 (23)	.63
Urban	11 (22)	20 (41)	.08
P[b]	.62	.09	. . .
Use fans to keep cool			
Both rural and urban	68 (67)	73 (72)	.54
Rural	43 (83)	42 (81)	> .99
Urban	25 (51)	31 (63)	.31
P[b]	≤ .001	.07	. . .
Close blinds or curtains during hottest part of the day			
Both rural and urban	81 (80)	82 (81)	> .99
Rural	42 (81)	43 (83)	> .99
Urban	39 (80)	39 (80)	> .99
P[b]	> .99	.8	. . .
Check with friends and family during hot days			
Both rural and urban	89 (88)	91 (90)	.82
Rural	43 (83)	44 (85)	> .99
Urban	46 (94)	47 (96)	> .99
P[b]	.12	.09	. . .

[a]*P* values were obtained between response in previous summers vs summer 2020 in the same location in the Fisher exact test.

[b]*P* values were obtained between response in the urban location vs the rural location concurrently in the Fisher exact test.

conditioning capacity (e.g., not enough air-conditioning units, air-conditioning window unit only), financial concerns (e.g., high electricity bills owing to air conditioning, limited income), extreme heat (e.g., participants said, "[The weather is] too hot," "The heat was abnormal"), and housing types (e.g., mobile homes) were the reasons for the concerns reported by 13 (33%), 10 (26%), 4 (10%), and 2 (5%) of the 38 participants, respectively. These results

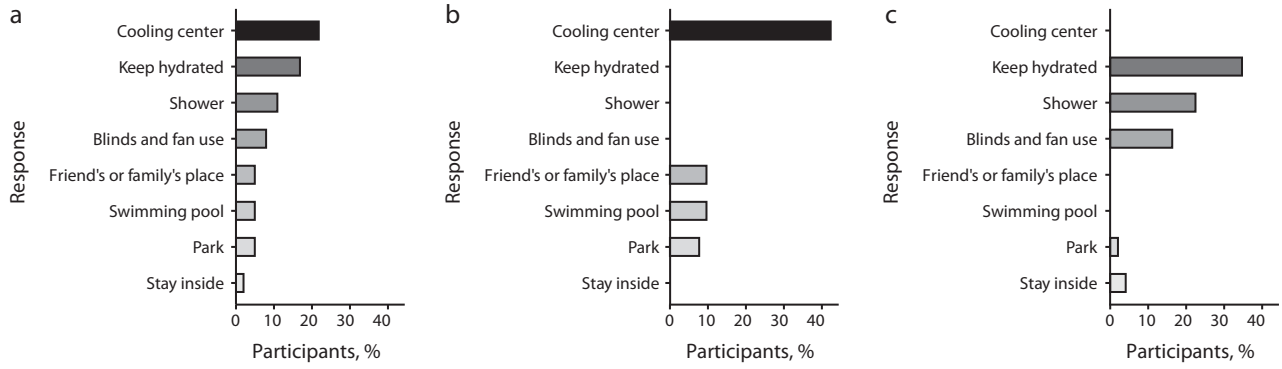

FIGURE 1— Methods Participants Reported They Would Prefer to Use to Keep Cool in an Upcoming Heatwave Forecasted in Summer 2020 for (a) Both Wilcox County and Birmingham City, AL, (b) Wilcox County Only, and (c) Birmingham City Only

Note. A total of 36 participants (69%) in Wilcox County and 34 participants (69%) in City of Birmingham reported they would use a method, if available (5 participants reported 2 methods).

emphasize the importance of low-cost cooling alternatives in homes.

A total of 70 participants (69%; 36 rural participants and 34 urban participants) reported that they would use a recommended method or methods to keep themselves and friends and families cool during the forecasted upcoming heatwave. Going to cooling centers (if accessible and open), keeping hydrated, and showering were the top 3 reported methods (Figure 1). Rural participants responded that using cooling centers would be the preferred method, whereas keeping hydrated was the preferred method for urban participants. Twenty-nine (29%) participants reported that they would not use any of the recommended methods, and "COVID-19" (14%) and "stay inside (avoiding methods requiring participants to go outside to keep cool)" (8%) were the top 2 reasons reported by participants not using recommended methods from both locations (Figure A [available as a supplement to the online version of this article at http://www.ajph.org]).

In conclusion, participants were less likely to use public cooling centers or other public spaces in summer 2020 compared with previous summers because of the COVID-19 pandemic and recent police brutality. Uncertain air-conditioning capacity and financial concerns were the top 2 reasons behind cooling concerns when a heatwave was forecasted.

ADVERSE EFFECTS

No adverse events were reported.

SUSTAINABILITY

Community–academic partnerships can offer a sustainable method to create and maintain the networks needed to rapidly assess and respond to emergent public health threats.

PUBLIC HEALTH SIGNIFICANCE

Systemic racism is a leading public health concern, and police brutality cases, COVID-19, and high temperatures were dangerous concurrent challenges for public health in summer 2020.[2] Before 2020, there was limited access to swimming pools and other public cooling spaces because of redlining and the resultant disinvestment in Birmingham and Wilcox County. This study illustrates the feasibility and fast responsiveness of a previously established community–academic partnership in reaching out to residents, collecting information on heat-health behaviors, and sharing heat-protective information in urban and rural locations amid the COVID-19 pandemic and high-profile police brutality cases in summer 2020. Our results provide evidence on how heat-health behaviors may be changing because of the pandemic and cases of police brutality, and this information may be helpful for future heat mitigation intervention development. AJPH

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CONTRIBUTORS

S. Wang performed the data curation, formal analysis, validation, and visualization and wrote the original draft of the article. E. Johnson and S. Tyson acquired the data. E. Johnson, S. Tyson, and J. M. Gohlke conceptualized the study. J. M. Gohlke was the project administrator and supervised the study. All authors contributed to the methodology and investigation and wrote, reviewed, and edited the article.

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CONFLICTS OF INTEREST

The authors report no potential or actual conflicts of interest from funding or affiliation-related activities.

HUMAN PARTICIPANT PROTECTION

This study was approved by the Virginia Tech institutional review board (protocol 15-761).

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