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Factors Associated with Seasonal Influenza Immunization among Church-going Older African Americans

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Abstract

Objectives—Churches and faith institutions can frequently influence health behaviors among older African Americans. The church is a centerpiece of spiritual and social life among African American congregants. We explored its influence on influenza immunization coverage during the 2012–2013 influenza season.

Methods—A cross-sectional study was conducted among congregation members ages 50–89 years from six churches in the Atlanta region in 2013–2014. We computed descriptive statistics, bivariate associations, and multivariable models to examine factors associated with immunization uptake among this population.

Results—Of 208 study participants, 95 (45.7%) reported receiving the influenza vaccine. Logistic regression showed that increased trust in their healthcare providers' vaccine recommendations was a positive predictor of vaccination among participants who had not experienced discrimination in a faith-based setting (OR: 14.8 [3.7,59.8]), but was not associated with vaccination for participants who had experienced such discrimination (OR: 1.5 [0.2,7.0]). Belief in vaccine-induced influenza illness (OR: 0.1 [0.05, 0.23]) was a negative predictor of influenza vaccination.

Conclusion—Members of this older cohort of African Americans who expressed trust in their healthcare providers' vaccine recommendations and disbelief in vaccine-induced influenza were more likely to obtain seasonal influenza immunization. They were also more likely to act on their trust of healthcare provider's vaccine recommendations if they did not encounter negative

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influenza immunization attitudes within the church. Having healthcare providers address negative influenza immunization attitudes and disseminate vaccine information in a culturally appropriate manner within the church has the potential to enhance future uptake of influenza vaccination.

Keywords

Influenza; vaccination; disparities; churches; African Americans

INTRODUCTION

Disparities in Influenza Vaccination

Influenza is an infectious, airborne illness, transmitted person to person via virus-containing droplets generated when an infected person sneezes or coughs. It can also be transmitted through contact with respiratory secretions followed by touching of the eyes, mouth, or nose. Common symptoms include fever (101°–102°F), myalgia, sore throat, nonproductive cough, and headache [1]. Influenza is a significant cause of preventable morbidity and mortality in the United States, resulting in more than 200,000 hospitalizations and 30,000 deaths annually [2]. Older populations are particularly vulnerable; individuals over the age of 65 account for 90% of influenza-caused deaths [2, 3]. Consequently, the CDC's Advisory Committee on Immunization Practices (ACIP) recommends an annual influenza vaccine for those at high risk, including adults aged 65 and older [3], those with chronic conditions such as diabetes, asthma, and heart disease [3], persons who have immunosuppression [4], and healthcare personnel [4]. Because these chronic conditions are also prevalent in adults aged 50 to 64, this group has also been added to those who are recommended for influenza vaccination [3]. Despite these recommendations, the percentage of individuals over the age of 65 who have received influenza vaccination is estimated at 66%, well below the 90% target set by the Healthy People 2020 objective [5, 6]. Even more concerning is the fact that African Americans have lower seasonal influenza immunization coverage, estimated at 56% by the end of the 2010–2011 vaccine cycle [7].

Immunization Motivators

Several factors have been identified as predictors of vaccination in minority or elderly populations, such as a positive attitude towards vaccines and prior immunization history, both of which indicate a positive perception of vaccines as an important preventive health strategy [8, 9]. Influenza vaccination is also associated with the perception that one is susceptible to contracting influenza [10]. In addition, provider influences shape immunization behavior among older African Americans by communicating with physicians and/or midlevel providers about vaccine-related benefits [11]. Individuals who access regular medical care and government-based health and social services are more likely to receive an influenza immunization than those who do not utilize these resources [12].

Another factor influencing health outcomes among older African Americans is perceived discrimination in health, socioeconomic, and institutional environments. Perceived discrimination has been associated with poorer mental health, hypertension, and other chronic conditions [13]. It has also been associated with reduced likelihood of health-seeking behavior, such as lower utilization of preventive services like cholesterol testing and

influenza immunization. As a result of such experiences, many older African Americans turn away from conventional medicine for their health needs and rely on traditional herbal and alternative preventive and therapeutic treatments for influenza [13].

Impact of Healthcare Provider-Patient Relationship

A strong patient-healthcare provider relationship based on trust has also been shown to be an important predictor of vaccination [14]. Studies have shown that a high level of trust translates into improved patient-provider communication about immunizations [14, 15]. Among African Americans there is evidence that the provider conversations that are most highly persuasive towards healthy behaviors are those that recognize and honor the importance of complementary medical approaches aligned with core spiritual and religious practices and beliefs [16].

Faith-Based Settings

The church is an important source of social support for many older African Americans, acting as a source of unity and providing emotional and health support to its parishioners [17, 18]. Previous studies have shown that people with higher levels of church participation tend to have better health outcomes [19]. Additionally, churches can be important conduits for disseminating health messages and generating strong participation for health screenings, including those for hypertension [20], diabetes and obesity [21], and tobacco addiction and comorbidity reduction [22].

Given that churches may exert considerable influence on attitudes and social norms among older African Americans, this study endeavored to examine how these factors impact influenza immunization coverage among church-going elders. Specifically, we examined how culturally-salient issues, such as the role of perceived discrimination experienced by members of this population within and outside of church communities, may filter vaccine promotion information and may have ultimately shaped attitudes toward immunization during the 2012–2013 seasonal influenza period.

MATERIALS & METHODS

Study Design

The study protocol was approved by the Emory University Institutional Review Board. We designed a cross-sectional study in which we collected data from 221 participants in six randomly selected churches characterized by having a predominance of African American congregants (60% of churchgoing population) who lived in the Atlanta metropolitan region. The three represented denominations included the American Methodist Episcopalian (AME), Baptist, and Seventh-Day Adventist (SDA) practices.

Within these churches, we screened and enrolled persons recruited via outreach conducted by pastors, health ministers, and other congregational leaders. Church members included those who regularly attend services, tithe, may be active on church committees, and attend church-related social gatherings. Eligibility requirements for the study included: 1) self-identified race/ethnicity as Black or African American; 2) aged 50 or older; 3) residing in

the 22-county metropolitan Atlanta region; 4) plans to reside in Atlanta for 12 months following recruitment; 5) no previous history of participation in clinical research studies; 6) church-confirmed congregant status, and 7) ability to read and write English.

Survey Development and Data Collection

We conducted surveys with all enrolled participants at baseline, three months, and six months between January 2013 and May 2014. The study utilized established macro-and micro-theoretical models including the socioecological model and an extended theory of reasoned action. As such, the measures include those pertaining to nested influences from the community- to individual-level and moderating and mediating influences on attitudes and social norms toward the vaccination outcome [23, 24, 25]. Items analyzed from this study included linked data from the baseline and 3-month questionnaires containing questions regarding the 2012–2013 influenza vaccine, sociodemographic information, attitudes towards vaccination, perceived discrimination and safety, perceived quality of relationship with primary healthcare provider, access to transportation, spirituality, immunization history, and health information sources. Questionnaires were pretested with pilot participants to ensure excellent readability and item comprehension at a 6th–8th grade reading level. Baseline and follow-up questionnaires were paper-administered at churches. Due to transportation and scheduling challenges faced by some participants, eleven 3-month questionnaires were administered telephonically.

Data Analysis

As our outcome variable, we compared the characteristics of participants who reported receiving the 2012–2013 seasonal influenza vaccine to those who reported not receiving the seasonal vaccine. We selected sociodemographic characteristics, discrimination measures, perceived provider relationship quality, attitudes towards spirituality, and access to transportation as independent variables in the analyses. Missing values in the discrimination variables were imputed using the EM algorithm.

To determine which potential predictors had strong associations with the outcome, bivariate analyses were conducted using chi-square and Fisher's exact tests. Multivariable logistic regression was used to assess significant predictors, identified at the 5% significance level. Cases with missing covariates were listwise deleted. A multicollinearity assessment using variance inflation factors was conducted to ensure there were no problematically high correlations between independent variables. Potential interaction terms were placed in the model prior to logistic regression analysis. Important interaction terms were selected using backwards elimination. The resulting —gold standard model was compared with all possible subsets of the model to gauge confounding. Prevalence ratios were also computed for the final model using the log-binomial model. Prevalence ratios were then compared to the odds ratios.

RESULTS

From the 221 individuals recruited at baseline in the study, 211 participants followed up at the 3-month time point, a 95% retention rate (Table 1). Of those 211 participants in the

dataset, three were dropped because their influenza vaccination status was unknown, leaving 208 participants with known vaccination outcome. Ninety-five (45.7%) participants reported receiving the 2012–2013 influenza vaccine. Forty-four of the participants were male (21.2%) and 164 were female (78.9%). One hundred sixteen participants were within the age range of 50–64 (55.8%) and 92 were aged 65 and older (44.2%). The AME church accounted for 58 members of the cohort (27.9%), 72 belonged to a Baptist church (34.6%) and 78 belonged to an SDA church (37.5%). Twenty-two participants reported having no insurance (10.8%), seventy-five had a private insurance plan (36.8%), and the remaining 107 obtained insurance through managed care or a combination of managed care and private insurance (52.5%).

Multilevel Analyses

The items assessed in the survey included in the final model is presented in Table 2. Multivariable logistic regression indicated an interaction between trust in healthcare provider's vaccine recommendations and past experience with discrimination in a faith-based setting. The association between the primary exposure and outcome was significant only when study participants did not experience discrimination in a faith-based setting (OR = 14.8 [3.7, 59.8]). (Table 3) When study participants did experience discrimination in a church or faith-based setting, trust of a healthcare provider's vaccine recommendations was not significantly associated with the vaccination outcome (OR = 1.5 [0.3, 7.0]). Belief in vaccine-induced influenza was significantly negatively associated with vaccination (OR = 0.1 [0.05, 0.23]). Medical insurance, age, and easy access to influenza immunization were identified as confounders, but were not significantly associated with vaccination after adjustment for other variables in the model (Table 3).

Prevalence ratios were also estimated as a measure of association using a multivariable log-binomial model. As in the multivariable logistic regression model, the log-binomial model found a significant interaction between trust in healthcare provider's vaccine recommendations and past experience with discrimination in a faith-based setting. In the absence of perceived discrimination in a faith environment, the prevalence ratio for trust in healthcare provider's vaccine recommendations was significant (4.3 [1.5, 12.2]). In the presence of perceived discrimination in a faith environment, trust in healthcare provider's recommendations was not significant (1.15 [0.8, 1.6]). A significant prevalence ratio was also observed for belief in vaccine-induced influenza (0.3 [0.17, 0.49]). As expected, the prevalence ratios were closer to the null than the odds ratios, but the direction and significance of effects were equivalent (Table 4).

DISCUSSION

Our study reveals important findings on the influence within church communities on influenza immunization among older African Americans. One of the most profound findings is that of perceived discrimination experienced within faith-based communities. Those who did not perceive social discrimination in a church were more likely to follow up on their trust of providers on immunization recommendations and actually obtain immunization.

Older African Americans are less likely to receive the influenza vaccine if they perceive a negative attitude towards immunizations in their community [26]. Given that the church is a strong institution of social support for older African Americans and as the churches in our sample were comprised of predominantly African American populations, it is unlikely that those who perceived discrimination experienced racial discrimination within the church. Rather, we believe that this ultimately reflects pervasive negative social norms towards certain types of preventive health behaviors (e.g., immunization) within the community.

African Americans have reported higher levels of medical mistrust and lower trust in healthcare providers, primarily because of experiences of racial discrimination [27]. The distrust African Americans feel towards the healthcare system arises in part from concerns expressed about economic motives associated with —western medicine and drug development [27, 28]. These perceptions of discrimination in healthcare settings are associated with negative patient-provider interactions during future healthcare appointments [29]. Perceived and experienced discrimination are also associated with lower rates of disease prevention and a decrease in health-seeking behaviors, including immunizations [13, 27, 30]. Therefore, it is possible that negative attitudes towards immunizations and other preventive health measures are prevalent within a strong institution of social support for older African Americans.

The results also emphasize the importance of building trust with primary providers for whom many turn to for advice on vaccines and immunization services. It is important to recognize that for many African Americans influenza immunization is anathema to their deeply held spiritual beliefs about health and healing. Many African Americans more commonly practice complementary alternative medicines such as prayer, herbs, meditation, vitamins, and exercise [31]. Given strong cultural traditions with these forms of medicine, many persons do not consult their healthcare provider about these types of therapies but instead turn to family and friends as trusted sources of information [32]. These practices are also more commonly favored by older African American women [33]. Perceived racial discrimination in healthcare and non-healthcare settings has also been associated with greater use of complementary alternative medicine in response to the barriers they have experienced, with African Americans more likely to seek alternative methods of care as their number of negative, discriminatory experiences increases [34].

When the church is a strong component of social support and alternative medicine is widely viewed as a valid health choice, a negative normative attitude within the church towards Western medicine and healthcare providers could potentially dissuade church members from seeking out information regarding conventional health services or accepting recommendations from their healthcare providers. This negative attitude has already been established regarding mental [12] and HIV-related health services [35]. Although not examined in our study, this may indicate that church parishioners are more likely to trust their healthcare providers with decisions about health and preventive behaviors if they no longer feel a sense of distrust towards Western medicine among their community and church.

Over a period of time, sustained exposure to preventive health information (including vaccine information) could lead to a change in mindset in older African Americans. Presenting health information by professionals with a strong background in healthcare, who are experienced enough in the field to easily disseminate health information, and who understand the cultural background of older African Americans is a potential method for affecting this change. An integrative approach involving church collaborations with healthcare providers has already been suggested as a way of improving access and attitudes towards mental health resources [12]. A study examining the effect of a community and faith-based health intervention suggested that pairing elderly African Americans in faith-based settings with members in the academic and medical community yielded a positive response in the intervention evaluations, suggesting that this approach has the potential to successfully promote conventional medicine as an avenue for healthy behaviors [36]. An open mindset within the congregation could lead members to feel more comfortable seeking out health information, help strengthen the relationship with their healthcare providers, and inspire favorable attitudes towards vaccination.

Study Limitations

We acknowledge that the sampling of older African American participants from churches in the Atlanta area is not representative of other cities in the United States. The authors note that this study, based on its urban cohort, cannot address rural African American churchgoers' perceptions of seasonal influenza vaccination and its modifiers. Thus, there may be important urban/rural distinctions that remain to be elucidated in this context. Although churches were randomly selected, there is potential for selection bias arising from the selection of participants within churches. Additionally we recognize the limitations of self-reported immunization status. Since the self-reported immunization event occurred less than one year prior to the survey, and because influenza immunization is actively obtained by the individual, we feel that the risk of recall bias is reasonably small. There is also the potential for social desirability bias, as study participants may have falsely indicated that they received the influenza vaccine to appear more health-conscious.

Future Research

Future research should involve medical records verification regarding the vaccination outcome to eliminate the potential recall and social desirability bias. A randomization procedure should be utilized to select study participants in all the selected churches to eliminate any selection bias. Future studies should also amass a sample size that can be used to determine urban/rural distinctions in perceptions of seasonal influenza vaccination and its modifiers.

CONCLUSION

The results of this study indicate that altering the perceptions of Western medicine, preventive health behaviors that utilize Western medicine, and perceptions of healthcare providers amongst church communities is integral in encouraging this population to receive the influenza vaccine, pursue other health behaviors, and engage in conversation with their healthcare providers. This can be done through sustained exposure to health speakers that

have strong backgrounds in healthcare and can understand and connect to the cultural background in this age group.

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Highlights

- Health provider positively predicts immunization in the absence of discrimination.
- Belief in vaccine-induced influenza is a negative predictor of immunization.
- Negative vaccine views in churches are related to less trust in health providers.
- Altering vaccine attitudes in churches could improve trust in healthcare providers.
- Health providers should deliver vaccine messages in a culturally appropriate style.

Table 1Study Population Sociodemographic Characteristics (N = 221[†])

Variable	N	% of population
2012–2013 influenza vaccination outcome		
Received vaccine	95	45.7
Did not receive vaccine	113	54.3
Gender		
Male	44	21.2
Female	164	78.9
Age		
50–64 years	116	55.8
65+ years	92	44.2
Marital Status		
Single/Never Married	20	9.6
Married/Domestic Partner	98	47.1
Divorced/Separated	56	26.9
Widowed	34	16.4
Educational Attainment		
High School/ GED	75	36.1
Technical/Vocational/ Associate's Degree	60	28.9
Bachelor's Degree	35	16.8
Master's/Doctorate	38	18.3
Employment (missing: 7)		
Unemployed/ retired	138	66.67
Employed (part-time and full time)	63	30.43
Medical Insurance Policy (missing: 4)		
No insurance/other	22	10.8
Private insurance plan	75	36.8
Managed care/ Combination Plan	107	52.5
Church Denomination		
African Methodist Episcopal (AME)	58	27.9
Baptist	72	34.6
Seventh-Day Adventist (SDA)	78	37.5
Household Income Status (missing: 22)		
\$20,000	55	29.6
\$20,000 – \$40,000	46	24.7
\$40,001 – \$80,000	55	29.6
\$80,000+	30	16.1

[†] 13 cases listwise deleted

Table 2

2012–2013 Influenza Vaccination Predictors

Survey Item	Response Options
Receipt of the 2012–2013 Influenza Vaccine	
Did you receive this past season’s flu shot (2012–2013)?	a. Yes b. No c. Don’t Know/Don’t Recall
Sociodemographic Variables	
How old are you?	____years old
Describe your medical insurance policy	a. Private Insurance Plan b. Medicare c. Medicaid d. Combination of Private Insurance and Medicare e. Other f. I do not have health insurance g. I do not know
Attitudes Towards Influenza Vaccination	
I worry that getting the flu shot will give me the flu	1 Strongly Agree 2 Agree 3 Neutral/No Opinion 4 Disagree 5 Strongly Disagree
Perceived Discrimination and Safety	
In your lifetime, have you faced discrimination at a church or faith-based organization?	a. Never b. Once c. More than once d. Not Applicable
Perceived Quality of Relationship with Primary Healthcare Provider	
I trust my provider to make decisions about which vaccines would be the best for me to receive	1 Strongly Agree

Survey Item	Response Options
	2 Agree
	3 Neutral/No Opinion
	4 Disagree
	5 Strongly Disagree
Access to Vaccination	
I can easily get the flu shot	1 Strongly Agree
	2 Agree
	3 Neutral/No Opinion
	4 Disagree
	5 Strongly Disagree

Table 3Multiple logistic regression odds ratio estimates for 2012–2013 influenza vaccination predictors (N=221[†])

Factor	Odds Ratio	95% CI	p-value*
Trust in healthcare provider's vaccine recommendations, in the absence of perceived discrimination in faith-based setting	14.83	(3.68, 59.83)	<0.01
Trust in healthcare provider's vaccine recommendations, in the presence of perceived discrimination in faith-based setting	1.5	(0.32, 7.00)	0.61
Perceived discrimination in faith-based setting, when trust in healthcare provider's vaccine recommendation is low	3.43	(0.56, 21.25)	0.18
Medical insurance status (private plan)	2.91	(0.46, 18.25)	0.25
Medical insurance status (managed care)	4.16	(0.65, 26.83)	0.13
Easy access to influenza immunization	2.55	(0.78, 8.39)	0.12
Belief in vaccine-induced influenza	0.1	(0.05, 0.23)	<0.01
Age (65+)	1.53	(0.50, 4.65)	0.46
Intercept	--	--	<0.01

* p value significant at .05

[†] 41 cases listwise deleted

Table 4Multiple log-binomial prevalence ratio estimates for 2012–2013 influenza vaccination predictors (N=221[†])

Factor	Prevalence Ratio	95% CI	p-value*
Trust in healthcare provider's vaccine recommendations, in the absence of perceived discrimination in faith-based setting	4.25	(1.48, 12.22)	<0.01
Trust in healthcare provider's vaccine recommendations, in the presence of perceived discrimination in faith-based setting	1.39	(0.59, 3.28)	0.45
Perceived discrimination in faith-based setting, when trust in healthcare provider's vaccine recommendations is low	2.42	(0.66, 8.88)	0.18
Medical insurance status (private plan)	1.95	(0.53, 7.13)	0.31
Medical insurance status (managed care)	1.88	(0.50, 7.05)	0.35
Easy access to influenza immunization	1.8	(0.93, 3.48)	0.08
Belief in vaccine-induced influenza	0.29	(0.17, 0.49)	<0.01
Age (65+)	1.15	(0.83, 1.60)	0.40
Intercept	--	--	<0.01

* p-value significant at .05

[†] 41 cases listwise deleted