HHS Public Access

Author manuscript

JAMA Ophthalmol. Author manuscript; available in PMC 2018 August 01.

Published in final edited form as:

JAMA Ophthalmol. 2017 August 01; 135(8): 878–882. doi:10.1001/jamaophthalmol.2017.1998.

Eye Health Knowledge and Eye Health Information Exposure Among Hispanic/Latino Individuals:

Results From the Hispanic Community Health Study/Study of Latinos

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Abstract

IMPORTANCE—Routine eye care is important to maintaining eye health and preventing visual impairment. However, poor knowledge of ocular risk factors and disease as well as minimal exposure to eye health information may compromise adherence to eye care recommendations. Studies have shown that Hispanic/Latino people have poor eye care utilization, but little is known about their knowledge of eye health and exposure to eye health information.

OBJECTIVE—To examine factors associated with more eye health knowledge and greater exposure to eye health information among Hispanic/Latino people.

DESIGN, SETTING, AND PARTICIPANTS—This was a cross-sectional ocular study of 1235 participants living in the Miami, Florida, site of the Hispanic Community Health Study/Study of Latinos, a multisite epidemiologic study of disease prevalence and development among Hispanic/Latino people. Data were collected from October 1, 2011, through September 30, 2013, and data analyses were conducted between May 28, 2014, and March 18, 2015. Descriptive and

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Conflict of Interest Disclosures: All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.

Additional Contributions: The authors thank the staff and participants of the Hispanic Community Health Study/Study of Latinos for their important contributions.

Author Contributions: Dr Lee had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.
Study concept and design: McClure, Lee.
Acquisition, analysis, or interpretation of data: All authors.
Drafting of the manuscript: McClure, Arheart, Lee, Tannenbaum, Zheng.
Critical revision of the manuscript for important intellectual content: All authors.
Statistical analysis: McClure, Zheng, Arheart, Lee.
Obtained funding: Lee.
Administrative, technical, or material support: McClure, Tannenbaum, Perera, Gellman, Lam, Lee.
Study supervision: Gellman, Lam, Lee.

multivariable regression analyses were performed for 3 ocular health care outcomes. Regression models were built sequentially, with variables conceptually grouped according to Andersen's Behavioral Model of Health Services Use and Behavioral Model for Vulnerable Populations.

MAIN OUTCOMES AND MEASURES—Ability to identify 8 factors on a general eye health knowledge scale and number of eye health information sources seen or heard about in the past 12 months.

RESULTS—Of the 1235 participants, 748 (73.4%) self-identified as being of Cuban descent and 407 (19.2%) self-identified as being from Central or South America, 478 (46.7%) were women and 757 (53.3%) were men, and the mean (SD) age was 53.6 (8.1) years. Participants with at least a high school degree or general educational development certificate had greater eye health knowledge (incidence rate ratio [IRR], 1.08; 95%CI, 1.01–1.15 and IRR, 1.11; 95%CI, 1.04–1.17, respectively) as did those with a higher mental health score on the Short Form 12-Item, version 2, Health Survey (IRR, 1.03; 95%CI, 1.01–1.04). Those with educational attainment beyond a high school degree or a general educational development certificate (IRR, 1.29; 95%CI, 1.07–1.54), those who were 60 years or older (IRR, 1.32; 95%CI, 1.06–1.63), and those with a household income in US dollars of $20 001 to $40 000 (IRR, 1.23; 95%CI, 1.05–1.44) or greater than $40 000 (IRR, 1.25; 95%CI, 0.98–1.59) were more likely to be exposed to at least 5 sources of eye health information in the past 12 months.

CONCLUSIONS AND RELEVANCE—Among Hispanic/Latino people, age, educational level, income, and mental health may be important correlates of eye disease knowledge and eye health information exposure. These findings might be used to support the development of targeted interventions designed to improve eye health in this population.

Vision and eye care are critical to maintaining eye health and preventing visual impairment; however, poor knowledge of ocular risk factors and poor exposure to eye health information may hinder receipt of care. Hispanic/Latino members of the US population have greater visual impairment[1] and poorer vision and eye care utilization,[2–4] and the few studies on eye health knowledge conducted among these individuals found that they knew the least about general eye health compared with members of all racial/ethnic groups in thecountry.[5] Studies on specific ocular diseases showed poor knowledge among Hispanic/Latino people[6] as well as among older individuals and those with lower educational attainment.[7]

Because health knowledge is associated with health behaviors and outcomes,[8] understanding the correlates of better eye health knowledge is key to improving eye health among Hispanic/Latino people. In addition, exposure to eye health information affects care-seeking behavior[5] and likely the level of eye health knowledge. This exposure may be influenced by sociodemographic and behavioral factors. To investigate these issues, we surveyed a heterogeneous group of Hispanic/Latino people about ocular health factors.

Methods

From October 1, 2011, through September 30, 2013, we conducted the Ocular Study of Latinos (SOL), an ancillary study of the Hispanic Community Health Study/Study of Latinos (HCHS/SOL), a multisite epidemiologic study of disease prevalence and development among Hispanic/Latino people; a detailed description of the HCHS/SOL has

been published previously.[9,10] The Ocular SOL asked participants in the HCHS/SOL Miami, Florida, site to complete a survey on vision health, ocular disease knowledge, and vision and eye care utilization. Ocular SOL data were then merged with the HCHS/SOL baseline data to obtain additional health-related variables. Data analyses were conducted between May 28, 2014, and March 18, 2015. This study was approved by the publications committee of the HCHS/SOL and the institutional review board of the University of Miami. Oral patient informed consent was given by each participant for the Ocular SOL survey, and written consent was given at the baseline of the HCHS/SOL.

The first outcome was general eye health knowledge, a scale created to determine whether participants could correctly identify 8 factors (seeing an eye care professional regularly, not smoking, controlling blood pressure, controlling cholesterol level, wearing sunglasses, eating dark green leafy and orange vegetables, controlling blood glucose level, and avoiding becoming diabetic) that help prevent eye disease or preserve vision; further details on this scale creation are described elsewhere.[11] The second outcome was the number of eye health information sources that participants had seen or heard about in the preceding 12 months. Sources included media outlets, drugstores, religious organizations, health care professionals (including physician's office, clinic, or community health screening), health information hotline, and friends and family. The number of sources were summed and grouped as 0, 1, 2, 3, 4, and 5 or more.

Independent variables included sociodemographic, health care–related, and health and risk factor variables. These variables were classified into analytic groups according to Andersen's Behavioral Model of Health Services Use[12] and the Behavioral Model for Vulnerable Populations,[13] as described previously.[4,11]

Analysis of the descriptive statistics was conducted using SAS software, version9.3 (SAS Institute Inc). Because both outcomes were count variables and skewed in distribution, generalized linear regressions with negative binomial distribution and log-link functions were performed in Stata, version 13 (StataCorp LLC) with resulting incidence rate ratios (IRRs) and 95% CIs. Analyses were weighted and adjusted for complex survey design.

Model selection was conducted according to the Behavioral Model of Health Services Use and the Behavioral Model for Vulnerable Populations variable categories by adding sequential variable blocks (Table 1): predisposing traditional factors, predisposing vulnerable factors, enabling factors, need factors, and ocular knowledge factors. A *t* test was used to calculate the 2-sided *P* values. Variables significant at $P < .20$from each behavioral model were retained in subsequent models such that the final model contained only those factors significant at $P < .20$.

Results

Of the 1235 participants, 748 (73.4%) self-identified as being of Cuban descent and 407 (19.2%) self-identified as being from Central or South America; 478 (46.7%) were women and 757 (53.3%)were men; and the mean (SD) age was 53.6 (8.1) years. A description of the target population is given in Table 1. On the general eye health knowledge scale, all

participants correctly answered a mean (SE) 6.9 (0.05) items of the 8 questions. Only 46(3.8%) of the target population had seen or heard 5 or more eye health information sources in the past 12months.

Table 2 presents univariate and final multivariable model results of both outcomes. In the final multivariable models, those with educational attainment of a high school (HS) degree or general educational development (GED) certificate (IRR, 1.11; 95%CI, 1.04–1.17) or more (1.08; 95%CI, 1.01–1.15) had better eye health knowledge compared with those with no HS degree or GED certificate. A higher mental health score on the Short Form 12-Item, version 2, Health Survey[15] was associated with greater general eye health knowledge (IRR, 1.03;95% CI, 1.01–1.04), which meant that a 1-unit change in the mental health score was associated with a 3% increase in the knowledge scale. The groups more likely to be exposed to 5 or more sources of eye health information in the past 12 months were those with greater than a HS degree or GED certificate (IRR, 1.29; 95%CI, 1.07–1.54) compared with those without a HS degree or GED certificate; those with a household income in US dollars of $20 001 to $40000(IRR, 1.23; 95%CI, 1.05–1.44) and those with an income of more than $40000 (IRR, 1.25; 95% CI,0.98–1.59) compared with those making less than $20 000; and those who were 60 years or older (IRR, 1.32; 95%CI, 1.06–1.63) compared with those aged 40 to 49 years.

Discussion

The Ocular SOL suggested that participants with at least a HS education were more likely to have greater eye health knowledge and exposure to more eye health information sources. Higher income and older age were also associated with exposure to more eye health information sources, and better mental health status was associated with greater eye health knowledge. Acculturation, sex, and self-rated vision health, however, were not associated with eye health knowledge. Eye health knowledge was not associated with greater exposure to eye health information, particularly for those60years or older, perhaps because more sources of information do not necessarily result in better knowledge since the sources are either not of good quality or not relevant to the participant's worldview.[16] In addition, participants may have lacked the critical engagement with eye health information needed to apply the knowledge and make behavioral changes.[17]

These results suggest that, to improve eye health knowledge among Hispanic/Latino people in the United States, better sustained programs targeting individuals younger than 60 years and those living in poverty (on the basis of income and educational level) are needed. This strategy may include creating high-quality messages that are both culturally relevant and accessible. Further research is needed to determine which sources of information are most likely to influence these sociodemographic groups.

Limitations

This study had some limitations. First, we relied on self-reported measures of eye health knowledge and information sources, which are subject to recall bias. Second, we had no method for determining the quality of eye health information sources; thus, we can only speculate as to how these sources may influence eye health knowledge. Third, because of the

cross-sectional nature of this study, we cannot make any assertion about the causation of our findings. Last, because the study sample consisted predominantly of Cuban and Central or South American participants at the HCHS/SOL Miami site, the results may not be generalizable to all Hispanic/Latino people, such as those with Mexican ancestry. However, because the racial/ethnic group in our sample has rarely been examined in other studies, a focus on this population may be considered a significant strength.

Conclusions

This study suggests that age, educational level, income, and mental health are key correlates of eye disease knowledge and exposure to eye health information sources among Hispanic/Latino people. These factors may, therefore, represent important public health targets for future research and interventions aimed at improving eye health in this population.

Acknowledgments

Funding/Support: The Ocular Study of Latinos was funded by grants 1U58DP002652 to the University of Miami (Mss McClure and Zheng; Drs Tannenbaum, Arheart, Lam, and Lee), 5U58DP002653 to Johns Hopkins University, 5U58DP002651 to the University of Alabama at Birmingham, and 1U58DP002655 to the Wills Eye Hospital and by grant T32 HL007426-37 for the Behavioral Medicine Research in Cardiovascular Disease program (Ms Perera) from the National Institutes of Health (NIH) and the National Heart, Lung, and Blood Institute (NHLBI). The Hispanic Community Health Study/Study of Latinos was funded by the NHLBI through contract N01-HC65233 to the University of North Carolina, N01-HC65234 to the University of Miami (Drs Gellman and Lee), N01-HC65235 to the Albert Einstein College of Medicine, N01-HC65236 to Northwestern University, and N01-HC65237 to San Diego State University as well as through a transfer of funds from the National Institute on Minority Health and Health Disparities, National Institute on Deafness and Other Communication Disorders, National Institute of Dental and Craniofacial Research, National Institute of Diabetes and Digestive and Kidney Diseases, National Institute of Neurological Disorders and Stroke, and Office of Dietary Supplements of the NIH.

Role of the Funder/Sponsor: The funding sources had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

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Key Points

Question

What sociodemographic, health, and behavioral factors are associated with better eye health knowledge and exposure to more sources of eye health information among Hispanic/Latino people?

Findings

In this cross-sectional ocular study of 1235 Hispanic/Latino individuals who were surveyed, higher educational level and better mental health status were associated with better general eye health knowledge. More education, better income, and older age were associated with exposure to more sources of eye health information.

Meaning

To improve eye health knowledge in the Hispanic/Latino population, culturally relevant and accessible campaigns are needed, particularly targeting individuals younger than 60 years and those living in poverty.

Table 1

Sociodemographic Status, Acculturation Indicators, Health Behaviors, Health Status, and Knowledge of Ocular Risk Factors Among 1235 Participants of the Ocular Study of Latinos, 2011–2013

Factor	No. (%)	SE
Predisposing Traditional Factors		
Age group, y		
40–49	691 (53.5)	2.3
50–59	425 (27.1)	1.7
≥60	119 (19.4)	1.9
Sex		
Women	478 (46.7)	1.7
Men	757 (53.3)	1.7
Racial/ethnic background		
Cuban	748 (73.4)	2.0
Central/South American	407 (19.1)	1.6
Other	80 (7.5)	1.2
Marital status		
Single	236 (17.9)	1.5
Married or living with partner	672 (56.2)	2.4
Separated, divorced, or widowed	323 (25.9)	1.7
Educational attainment		
No high school degree/GED	328 (25.2)	1.8
High school degree/GED	315 (24.7)	1.9
>High school degree/GED	590 (50.1)	2.1
Employment status		
Employed	568 (43.8)	1.9
Retired and not currently employed	108 (13.8)	1.6
Unemployed	557 (42.4)	2.0
Predisposing Vulnerable Factors		
Place of birth		
Foreign-born	1191 (95.7)	1.0
US-born (including US territories)	42 (4.3)	1.0
Years lived in US (among foreign-born participants)		
≤5	315 (27.9)	2.1
6–15	446 (34.4)	1.9
>15	474 (37.7)	2.7
SASH language subscale, No. of respondents (mean score)	1232 (1.4)	0.02
SASH ethnic social relations subscale, No. of respondents (mean score)	1128 (2.0)	0.02
Enabling Factors		
Health insurance		

Factor	No. (%)	SE
Currently insured	481 (46.4)	2.9
Without insurance in past 3 y	117 (9.2)	1.0
Without insurance for >3 y	365 (26.3)	1.8
Never been insured	261 (18.1)	1.8
Vision insurance (separate from health insurance)		
Yes	74 (7.7)	1.5
No	1155 (92.3)	1.5
Household income, US$		
≤20 000	670 (58.0)	2.5
20 001–40 000	328 (30.1)	2.0
>40 000	98 (11.9)	1.9
Difficulty communicating with a health care professional in the past 12 mo		
Yes	54 (4.0)	0.7
No	495 (42.9)	2.6
Did not see health care professional in past 12 mo	686 (53.1)	2.8
Could not get needed health care in the previous 12 mo because of cost		
Yes	194 (14.5)	1.7
No	1041 (85.5)	1.7
Need Factors		
Self-reported visual impairment		
Excellent/good	640 (54.4)	2.0
Fair	481 (36.3)	1.9
Poor/very poor	112 (9.3)	1.0
NEI VFQ-25 composite score	1235 (86.0)	0.7
SF-12v2 physical health score	1210 (48.5)	0.5
SF-12v2 mental health score	1210 (49.1)	0.4
Self-reported chronic disease		
0	515 (40.5)	1.9
1	456 (35.5)	1.6
≥2	264 (24.0)	1.6
Smoking status		
Never	643 (51.7)	1.7
Former	312 (25.6)	1.6
Current	274 (22.7)	1.7
NIAAA risky alcohol use		
Nondrinker	451 (43.6)	2.0
Low-risk drinker	454 (50.5)	2.0
At-risk drinker	57 (5.9)	1.0
Meets 2008 HHS Physical Activity Guidelines[14]		

Factor	No. (%)	SE
Yes	676 (53.6)	1.7
No	556 (46.4)	1.7
6-Item neurocognitive score (continuous)	1049 (5.4)	0.03
Word fluency score (continuous)	1040 (18.1)	0.3
Digital symbol score (continuous)	1029 (33.2)	0.6
Verbal learning/recall test	1049 (7.9)	0.1
Ocular Knowledge Factors		
General eye health knowledge scale, No. (mean score)[a]	1235 (6.9)	0.05
Heard/seen something from various sources about eye health in past 12 mo		
No sources	360 (29.4)	1.7
1 Source	456 (35.4)	1.7
2 Sources	230 (19.7)	1.8
3 Sources	95 (7.5)	0.9
4 Sources	46 (4.2)	0.8
≥5 Sources	46 (3.8)	0.6

Abbreviations: GED, general educational development certificate; HHS, US Department of Health and Human Services; NEI VFQ-25, National Eye Institute Visual Function Questionnaire-25 Items; NIAAA, National Institute on Alcohol Abuse and Alcoholism; SASH, Short Acculturation Scale for Hispanics; SF-12v2, Short Form 12-Item, version 2, Health Survey.

[a]Data represent the number of participants who could correctly identify 8 factors related to eye health and the mean score of the group. Further explanation is given in the Methods section.

Table 2

Factors Associated With Greater General Eye Knowledge and Eye Health Information From 5 or More Sources in the Past 12 Months

	IRR (95% CI)			
	General Eye Health Knowledge Score		≥5 Sources of Eye Health Information in Past 12 mo	
Factors	Univariate	Multivariable	Univariate	Multivariable
Age group, y				
40–49	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
50–59	1.00 (0.97–1.04)	NS	1.10 (0.96–1.27)	1.15 (1.00–1.32)
≥60	0.98 (0.92–1.04)	NS	1.24 (1.00–1.55)	1.32 (1.06–1.63)
Educational attainment				
No high school degree/GED	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
High school degree/GED	1.07 (1.01–1.12)	1.11 (1.04–1.17)	0.98 (0.81–1.18)	1.09 (0.90–1.31)
Greater than high school degree/GED	1.07 (1.01–1.12)	1.08 (1.01–1.15)	1.28 (1.07–1.54)	1.29 (1.07–1.54)
Household income, US$				
≤20 000	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
20 001–$40 000	1.06 (1.03–1.10)	1.04 (1.00–1.09)	1.25 (1.06–1.46)	1.23 (1.05–1.44)
>40 000	1.04 (0.98–1.10)	1.01 (0.95–1.08)	1.35 (1.04–1.75)	1.25 (0.98–1.59)
SF-12v2 mental health score	1.03 (1.01–1.04)	1.03 (1.01–1.04)	1.01 (0.94–1.07)	NS
Smoking status				
Never	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Former	0.99 (0.95–1.03)	NS	0.85 (0.71–1.02)	0.85 (0.71–1.03)
Current	0.97 (0.93–1.01)	NS	0.93 (0.77–1.12)	0.95 (0.79–1.13)
Verbal learning/recall test (continuous)	1.00 (0.99–1.01)	1.00 (0.99–1.01)	1.02 (0.99–1.05)	NS

Abbreviations: GED, general educational development certificate; IRR, incidence rate ratio; NS, not significant in the final model for this outcome; SF-12v2, Short Form 12-Item, version 2, Health Survey.