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# Public Attitudes About Eye and Vision Health

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**IMPORTANCE** Understanding the importance of eye health to the US population across ethnic and racial groups helps guide strategies to preserve vision in Americans and inform policy makers regarding priority of eye research to Americans.

**OBJECTIVE** To understand the importance and awareness of eye health in the US population across ethnic and racial groups.

**DESIGN, SETTING, AND PARTICIPANTS** Online nationwide poll created by experienced policy makers in August 2014 designed to understand the importance of eye health in the US population, although the poll was not subjected previously to formal construct-validity testing. The population survey comprised 2044 US adults including non-Hispanic white individuals and minority groups with minority oversampling to provide predicted margins of error no greater than 5%.

**MAIN OUTCOMES AND MEASURES** Respondent attitudes on the importance of eye health, concerns about losing vision, support for eye health research, and awareness of eye diseases and risk factors.

**RESULTS** Of the 2044 survey respondents, the weighten mean age was 46.2 years, 48% were male, and 11% were uninsured. Sixty three percent reported wearing glasses. Most individuals surveyed (87.5%; 95% CI, 84.5%-90%) believed that good vision is vital to overall health while 47.4% (95% CI, 43.7%-51.1%) rated losing vision as the worst possible health outcome. Respondents ranked losing vision as equal to or worse than losing hearing, memory, speech, or a limb. When asked about various possible consequences of vision loss, quality of life ranked as the top concern followed by loss of independence. Nearly two-thirds of respondents were aware of cataracts (65.8%) or glaucoma (63.4%); only half were aware of macular degeneration; 37.3% were aware of diabetic retinopathy; and 25% were not aware of any eye conditions. Approximately 75.8% and 58.3%, respectively, identified sunlight and family heritage as risk factors for losing vision; only half were aware of smoking risks on vision loss.

**CONCLUSIONS AND RELEVANCE** In this well-characterized survey across all US ethnic and racial groups, vision health was a priority with high support for ongoing research for vision and eye health. Many Americans were unaware of important eye diseases and their behavioral or familial risk factors. The consistency of these findings among the varying ethnic/racial groups underscores the importance of educating the public on eye health and mobilizing public support for vision research.

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As the world's population and average life expectancy has increased, so has the prevalence of visual impairment (defined as best-corrected Snellen visual acuity equivalent between 20/40 to better than 20/400 in the better-seeing eye) and blindness (defined as 20/400 or worse in the better-seeing eye).[1,2] As of 2010, the World Health Organization estimated that 39 million individuals were blind and 246 million experienced visual impairment.[3] The financial impact of visual disability is also substantial. In 2013, the total economic burden of vision loss and blindness in the United States was estimated to be $139 billion,[4] and treatment of eye-related disorders totaled more than $68.8 billion in annual direct medical costs.[4,5] Owing to an aging population and medical cost growth, the total economic burden is projected to increase to $717 billion by 2050.[4,5] The highest productivity losses from visual impairment are seen in high-income countries such as the United States.[6]

The negative impact of vision loss on quality of life has been well documented in the literature.[7-20] This negative effect of vision loss on quality of life has been demonstrated in association with cataract,[16,17] diabetic eye disease,[18] and age-related macular degeneration.[19] Consistently, a year of life with severe vision loss has been valued at a 50% to 70% decrement compared with a year of life in perfect health.[20] However, previous studies of patient attitudes and values around vision loss have not drawn from a cross-sectional, multiethnic sample of Americans. Additionally, while the previous literature may inform policy makers regarding resource allocation for sight-saving interventions, the literature is largely silent on the attitudes of Americans regarding resource allocation for research into the prevention of vision loss. Research to Prevent Blindness performed an attitudinal survey on the public's attitudes toward vision loss in 1965 and updated the poll in 1976 and 1988 (Gallup Organization Inc, unpublished material, 1976 and 1988); however, contemporary information regarding the public's attitudes toward eye health and knowledge of eye diseases remains sparse.

While publications document that US ethnic minorities are affected disproportionately by chronic eye conditions, such as glaucoma, and have a greater chance of vision impairment or blindness from these,[21-32] little information exists regarding attitudes and awareness of these groups toward eye diseases. Furthermore, whereas vision loss from chronic age-related eye diseases are predicted to have a large impact on the US economy as life expectancy of Americans increases, federal funding for eye research is less than 0.5% of the $139 billion annual cost of vision disorders.[33] To assess the importance of eye health in the current US population in this study, a comprehensive survey of US individuals, including non-Hispanic white individuals and minority groups, was undertaken to understand the attitudes of Americans regarding the importance of vision, vision loss, and vision research–related health care expenditures.

### Key Points

**Question** What are the attitudes and awareness of Americans toward vision loss and public support for eye health and vision-related research?

**Findings** In this online nationwide poll, respondents across all ethnic and racial groups described loss of eyesight as the worst ailment that could happen to them relative to losing memory, speech, hearing, or a limb. Most supported prevention and treatment of eye and vision disorders as a priority.

**Meaning** These findings underscore the importance of focusing on preservation of eye health and the public support for vision research across all ethnic and racial groups in the United States.

## Methods

An online poll was conducted by Zogby Analytics, commissioned by Research!America in August 2014 with funding from Research to Prevent Blindness and the Alliance for Eye and Vision Research. Questions for the poll were suggested by a working group consisting of a panel of representatives from the vision community and Research!America that were designed to understand the importance of eye health in the US population. Source material included 1965, 1976, and 1988 Research to Prevent Blindness survey questions and results (Gallup Organization Inc, unpublished material, 1965, 1976, and 1988) that were updated to reflect 2014 as well as data that the vision community members were interested in obtaining based on studies on incidence and cost of vision impairment and eye disease. Survey questions also were developed based on perspectives from Research!America from extensive experience in conducting similar surveys in other diseases. The survey question wording and design was reviewed and edited by 2 Zogby Analytics senior public opinion researchers with expertise in survey design along with the Research!America team of researchers. Revisions to the question wording and design were made as needed. However, no formal construct-validity testing was performed for this survey. The Johns Hopkins Medicine institutional review board waived approval because it determined that this study did not constitute human participants research. Each participant responded to the invitation to participate in the poll, and by way of their response, agreed to participate in the poll.

The online survey was conducted using nationwide online panels of adults who had agreed to participate in public opinion research. The online panels were recruited through a diversified network rather than through a single source to avoid "professional" panelists. To ensure that the recruitment was broad, diversified, and exhaustive, a wide range of different methods and sources were used. These included online and offline advertisements, telephone recruitment, radio spots, postal invitation, and referral programs. The recruitment strategy was varied to try to ensure optimal diversity and quality and to try to minimize any distortions that could arise from only 1 or a few methods of recruitment. Both broadly targeted and more narrowly targeted campaigns were used to ensure the necessary diversity of participants and to ensure that specific hard-to-reach target groups were represented on the panel (eg, mothers with small children, high-income groups). Individuals of lower socioeconomic status or those with fewer years of education may not have access to computers or the



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internet; however, presurvey stratification of the sample respondents invited to participate in the survey was used to include lower-income and lower-education respondents in the final sample.

From the panels, a random selection of potential survey respondents was selected and invited to participate in the survey. No participant had prior knowledge that they would be selected for the survey. The random sampling was based on select demographic variables, and for the nationwide survey, the unique sample selection was based on a representative sample of the respondents that had been disaggregated by sex, age, and geography. When the required criteria for the survey had been established, a random sample was pulled for individuals to receive the email invitations to participate in the survey. When panel participants responded to the email invitation to participate in the poll, they were taken via a secure link to online survey software where they completed the survey. Because email is password protected and unique to the respondent, the response most likely came from the intended participant. The link expired after a single use so no respondent could take the survey more than once and to ensure that the link could not be forwarded and used by another individual. Respondents who completed the survey received points toward online gift certificates. The poll questions may be viewed in the eAppendix in the Supplement.[34]

Minority oversampling was used because a nationwide US survey that is representative of the adult population is likely to have a high margin of sampling error among minority groups. For example, according to the US Census, African American individuals make up 13.2% of the total US population.[35] Therefore, a nationwide US survey of 1000 adults would include only about 136 African American individuals. The margin of sampling error for African American individuals then would be approximately 10.5% percentage points, meaning the results for a specific question could fall within a 21-point range. Therefore, the following 3 minority subgroups were oversampled: African American individuals: sample size, 417; margin of error, 4.9%; Asian individuals: sample size, 301; margin of error, 5.8%; and Hispanic individuals: sample size, 401; margin of error, 5%. These larger sample sizes ensured that enough members of the oversampled subgroups had more reliable estimates to be reported for that group. For the nationwide survey results, the members in the oversampled groups were weighted to their actual percentage in the population, allowing for the overall nationwide survey results to be representative on a national level as well as for the oversampled subgroups.

The final survey sample was compiled using information based on census data, voter registration figures and exit polls, and Central Intelligence Agency fact books. Zogby Analytics used weighting techniques to best represent the demographics of the population being surveyed. The entire US population in every state was part of the sample and was representative of the overall population distribution. The survey was not piloted prior to national distribution and data collection.

Survey questions were ordered by category, with the most general questions at the beginning and the most specific questions at the end in an attempt to reduce bias. Sample respondents remained anonymous. Data collection and subsequent analysis adhered to the tenets of the Declaration of Helsinki. Survey results were analyzed using Stata 12 (StataCorp) to control for the multistage sampling weights.

**Table 1. Sample Size and Study Population Characteristics**

| Characteristic | Sample Size, No. (%) | Weighted Mean (95% CI) |
|---|---|---|
| Total sample | 2044 | |
| African American | 417 (20.4%) | 0.12 (0.1-0.15) |
| Asian | 301 (14.7%) | 0.06 (0.04-0.08) |
| Hispanic | 401 (19.6%) | 0.13 (0.1-0.16) |
| White | 925 (45.3%) | 0.68 (0.64-0.71) |
| Age, y | NA | 46.20 (18-99)[a] |
| Male | NA | 0.48 (0.45-0.52) |
| Married | NA | 0.55 (0.52-0.59) |
| Uninsured | NA | 0.11 (0.09-0.14) |
| Wears | NA | |
| Glasses | NA | 0.63 (0.59-0.67) |
| Contacts | NA | 0.18 (0.15-0.21) |
| Reading glasses | NA | 0.14 (0.12-0.17) |
| Self-reported diagnoses | NA | |
| Cataract | NA | 0.13 (0.10-0.16) |
| Glaucoma | NA | 0.05 (0.03-0.06) |
| Diabetic retinopathy | NA | 0.03 (0.02-0.05) |
| Macular degeneration | NA | 0.04 (0.02-0.05) |

Abbreviation: NA, not applicable.

[a] Indicates total range in participant ages.

## Results

Polling data from 2044 US adults from the general population were obtained, and a press release issued by Research!America and AEVR revealing the results was published online on September 18, 2014.[36] **Table 1** shows sample sizes and sociodemographic characteristics of the study population (Table 1), and attitudinal results (**Table 2**) include nationally representative responses as well as by race/ethnicity. Response rates are reported as percentages calculated by sampling weights, and information on uncertainty is provided by confidence intervals. Of all respondents, 87.5% (95% CI, 84.5%-90%) agreed that good eye health is important to overall health. Losing eyesight was described as potentially having the greatest effect on their day-to-day life by 47.4% (95% CI: 43.7%-51.1%) of respondents, greater than loss of limb, memory, hearing, and speech (**Figure 1**). When asked which disease or ailment is the worst that could happen to them, blindness was ranked highest nationally and either first or second within each racial/ethnic group. Asian and Hispanic respondents ranked blindness (15% and 15%, respectively) behind only cancer (18% and 22%, respectively). Among white respondents, 24% ranked Alzheimer disease as the worst condition followed by 20% for blindness. Blindness was ranked worse than AIDS/human immunodeficiency virus, loss of limb, heart disease, arthritis, and deafness by all racial/ethnic groups (**Figure 2**).



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Table 2. Attitudinal Results, National and by Race/Ethnicity

| Question | % (95% CI) | | | | |
|---|---|---|---|---|---|
| | National | African American | Asian | Hispanic | White |
| Importance of eye health | | | | | |
| Eye health is important to overall health | 87.5 (0.8451-0.9001) | 83.5 (0.7725-0.8842) | 84.0 (0.7929-0.8781) | 84.1 (0.792-0.8802) | 90.3 (0.873-0.927) |
| Losing vision was assessed as the worst possible outcome | 47.4 (0.4367-0.5122) | 57.3 (0.5059-0.6383) | 42.9 (0.3735-0.4866) | 38.1 (0.3237-0.441) | 48.9 (0.4442-0.5332) |
| Losing vision is worse than losing hearing, memory, speech or limbs | 49.7 (0.4456-0.5492) | 41.9 (0.3217-0.5236) | 46.2 (0.3775-0.5488) | 39.4 (0.3079-0.4883) | 50. (0.4411-0.5591) |
| Primary concerns from losing vision | | | | | |
| Loss of independence | 66.1 (0.6234-0.6969) | 65.5 (0.5892-0.7168) | 60.6 (0.5491-0.6611) | 63.1 (0.5704-0.687) | 69.4 (0.6495-0.7349) |
| Loss of productivity | 44.4 (0.407-0.4828) | 38.8 (0.3255-0.4564) | 48.8 (0.4316-0.5457) | 45.7 (0.3952-0.52) | 44.8 (0.4044-0.493) |
| Loss of quality of life | 68.3 (0.6477-0.7175) | 59.1 (0.5248-0.6551) | 67.5 (0.6191-0.7262) | 60. (0.5389-0.6588) | 72.6 (0.6872-0.7626) |
| Support for eye health research | | | | | |
| National support is important | 81.5 (0.782-0.8445) | 83.2 (0.7695-0.8796) | 80 (0.7495-0.8421) | 78.9 (0.7329-0.8362) | 82.7 (0.7897-0.8586) |
| Current federal research is not enough | 45.9 (0.4216-0.4967) | 51.1 (0.4443-0.5782) | 35.4 (0.3011-0.41) | 50.2 (0.4393-0.5639) | 47.2 (0.4279-0.5165) |
| Nongovernment groups should increase research | 47.9 (0.4415-0.5172) | 50.7 (0.4398-0.5733) | 48.6 (0.4291-0.5433) | 56.9 (0.5061-0.6291) | 46.8 (0.4237-0.5125) |
| Would participate in a clinical trial | 49.6 (0.4585-0.5344) | 47.6 (0.4102-0.5427) | 48.6 (0.4291-0.5433) | 51.6 (0.4536-0.5784) | 51.8 (0.4736-0.5627) |
| Believes costs of eye disease will increase | 59.1 (0.5527-0.628) | 49.7 (0.4303-0.5636) | 57.8 (0.5203-0.6332) | 53.6 (0.4733-0.5985) | 62.3 (0.5791-0.6649) |
| Value of vision | | | | | |
| Share of financial resources willing to pay to prevent visual impairment | 24.8 (22.78-26.83) | 22.8 (23.01-29.43) | 26.8 (20.62-26.38) | 26.2 (24.8-32.1) | 23. (21.52-26.22) |
| Share of financial resources willing to pay to prevent blindness | 31.1 (28.83-33.37) | 28.8 (28.14-35.68) | 33.4 (23.65-29.32) | 31.9 (30.18-38.04) | 28.1 (28-33.48) |



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Figure 1. Conditions With the Greatest Effect on Day-to-Day Life

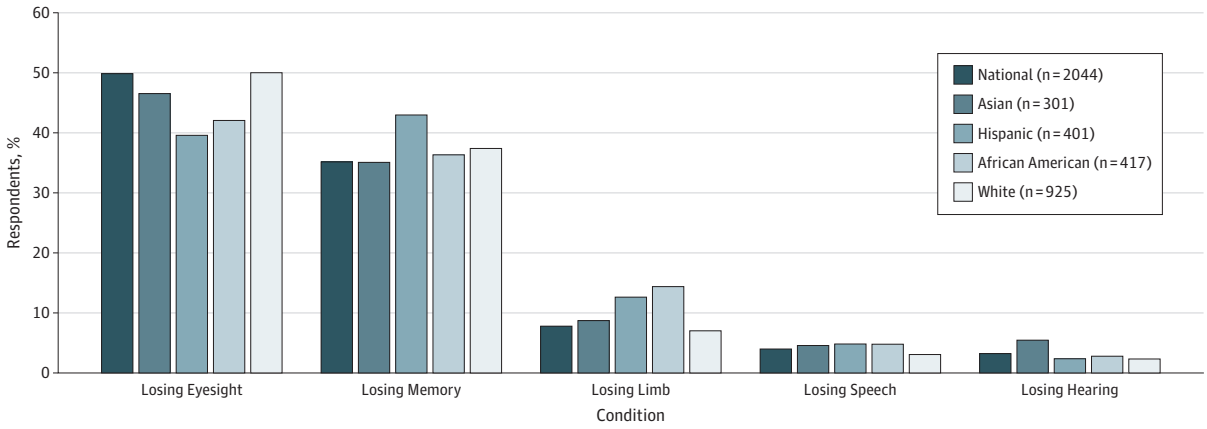
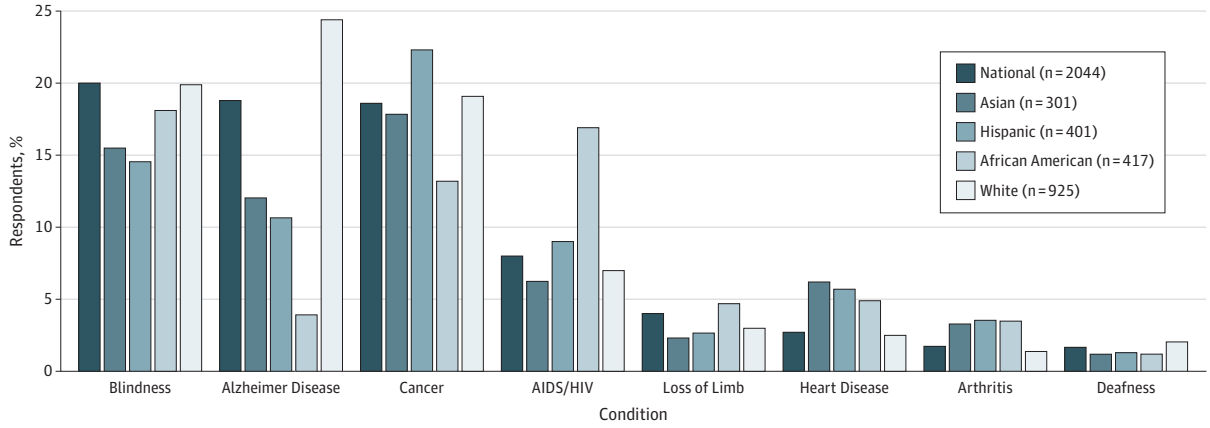



Figure 2. Rankings of Worst Conditions




National support of research focusing on improving prevention and treatment of eye and vision disorders was considered a priority among 81.5% (95% CI, 78.2%-84.5%). When told that the federal government spends on average $2.10 per person each year on such research, 45.9% (95% CI, 42.2%-49.7%) said that was not enough. Almost half (47.9%; 95% CI, 44.2%-51.7%) believed that nongovernmental sectors including industry, patient groups, and philanthropic organizations should increase funding for eye and vision research. Respondents reported willingness to pay 24.8% (95% CI, 22.8%-26.8%) of their total financial resources to prevent visual impairment including 31.1% (95% CI, 28.8%-33.4%) to prevent legal blindness.

Results for awareness of major eye conditions and risk factors are presented in **Table 3**. While 81.5% (95% CI, 78.2%-84.5%) of Americans reported having an eye examination, knowledge about specific eye disorders was uneven among eye disorders and among racial/ethnic groups. Nationally, 65.8% (95% CI, 61.9%-69.5%) reported awareness of cataract or glaucoma (63.4%; 95% CI, 59.5%-67.2%). Awareness of these conditions was lower among Asian and Hispanic individuals; just more than half reported awareness of these. While nationally half of Americans reported awareness of age-related macular degeneration, white respondents were more likely to do so (59.1%; 95% CI, 54.5%-63.6% compared with 33.2% of Asian respondents, 32.1% of African American respondents, and 26.8% of Hispanic respondents). Awareness of diabetic retinopathy was lowest across all groups (37.3%; 95% CI, 33.8%-40.8%) nationally and particularly low among Hispanic respondents, among whom 26.8% (95% CI, 21.9%-32.4%) reported awareness. Of all Americans, 25% (95% CI, 21.7%-28.6%) reported they were not aware of any of these conditions; an additional 4.8% (95% CI, 3.1%-7.3%) said they were not sure. Lack of awareness was higher among Asian respondents (31.2%; 95% CI, 26.1%-36.8%) and Hispanic respondents (35.4%; 95% CI, 29.5%-41.9%).

Awareness of risk factors for vision loss exhibited high rates of disparity. Of all respondents, 75.8% (95% CI, 72.2%-79.1%) believed excessive sunlight or ultraviolet radiation was a risk factor for eye disease. Awareness of ethnic heritage as a risk factor was second highest (58.3%; 95% CI, 54.4%-62.0%). Smoking was identified as a risk factor by 53.5% (95% CI, 49.7%-57.3%) nationally and higher among Asian respondents (60.1%; 95% CI, 54.4%-65.6%) and Hispanic respondents (62.0%; 95% CI, 55.9%-67.7%).



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Table 3. Awareness of Vision and Eye Health Nationally and by Race/Ethnicity

| Question | % (95% CI) | | | | |
|---|---|---|---|---|---|
| | National | African American | Asian | Hispanic | White |
| Awareness of major eye diseases | | | | | |
| Cataract | 65.8 (0.6194-0.6949) | 66.7 (0.5996-0.7288) | 52.7 (0.4695-0.5836) | 54.0 (0.4765-0.6019) | 72.4 (0.681-0.7641) |
| Glaucoma | 63.4 (0.5945-0.6722) | 67.1 (0.6029-0.7323) | 52.5 (0.4676-0.5817) | 52.8 (0.4649-0.5902) | 69.6 (0.6498-0.7382) |
| Diabetic retinopathy | 37.3 (0.3383-0.4083) | 32.1 (0.2651-0.3832) | 33.2 (0.2806-0.3883) | 26.8 (0.2191-0.3237) | 50 (0.3679-0.4532) |
| Macular degeneration | 50.5 (0.4668-0.5429) | 33.3 (0.2762-0.3942) | 36.9 (0.3154-0.4255) | 32.8 (0.2758-0.3856) | 59.1 (0.5449-0.6356) |
| None | 25 (0.217-0.2857) | 21.9 (0.1698-0.2784) | 31.2 (0.2612-0.3678) | 35.4 (0.2947-0.419) | 21.8 (0.1818-0.2597) |
| Not sure | 4.8 (0.0314-0.0729) | 7.5 (0.0402-0.1353) | 8.0 (0.0536-0.1166) | 4.4 (0.0256-0.0736) | 2.4 (0.0128-0.0439) |
| Awareness of risk factors for loss of vision | | | | | |
| Sunlight | 75.8 (0.7221-0.7911) | 69.5 (0.6271-0.7554) | 75.9 (0.7058-0.8046) | 76.6 (0.7133-0.8113) | 79.9 (0.7625-0.8304) |
| Family heritage | 58.2 (0.5444-0.6196) | 52.4 (0.4572-0.5909) | 63.8 (0.5809-0.6908) | 58.8 (0.5262-0.6477) | 59.6 (0.5521-0.6391) |
| Obesity | 50.3 (0.4647-0.5406) | 42.0 (0.3569-0.4868) | 57.2 (0.5145-0.6276) | 52.4 (0.4613-0.5861) | 52 (0.4753-0.5642) |
| Smoking | 53.5 (0.4967-0.573) | 47.9 (0.4128-0.5451) | 60.1 (0.5441-0.6559) | 62. (0.5593-0.6773) | 54.3 (0.4984-0.5874) |
| Costs of eye care | | | | | |
| Believes costs of eye disease will increase | 59.1 (0.5527-0.628) | 49.7 (0.4303-0.5636) | 57.8 (0.5203-0.6332) | 53.6 (0.4733-0.5985) | 62.3 (0.5791-0.6649) |
| Has vision insurance | 50.2 (0.464-0.5399) | 45.3 (0.3891-0.5196) | 52.7 (0.4693-0.5833) | 51.1 (0.4484-0.5731) | 49.1 (0.4466-0.5357) |
| Lack of vision insurance prevents eye examinations | 33 (0.2964-0.3651) | 37.4 (0.3123-0.44) | 35.4 (0.302-0.411) | 41.9 (0.3598-0.4814) | 33.6 (0.296-0.3786) |

Nationally, 59.1% (95% CI, 55.3%-62.8%) believed health care costs from eye disorders will increase by 2050, while 49.6% (95% CI, 45.9%-53.4%) said they likely would participate in a clinical trial for eye and vision research if recommended by a clinician. Of all respondents, 50.2% (95% CI, 46.4%-54.0%) said they had insurance coverage for routine eye examinations or glasses, while 33.0% (95% CI, 29.6%-36.5%) said they had eye examinations less frequently than they would like because of their insurance situation.

## Discussion

Across all ethnic and racial demographics, nearly 88% of Americans surveyed viewed eye health as critical to overall health. In a manner similar to previous non-cross-sectional studies, 47% viewed vision loss as the worst possible health condition that might befall them. This was true of 57% of African American individuals, a group known to have a several-fold increased prevalence of severe vision loss and potentially a greater personal experience with its effects than Americans of other ethnicities.[24] A similar attitudinal study, the knowledge, attitudes, and practices (KAP) study,[37] sponsored by the National Eye Institute and the Lions Clubs International Foundation, took place first in 1991 and again between October 2005 and January 2006.[37] In the KAP study, 3180 telephone interviews were completed in which patients from varying demographic groups were queried as to their knowledge of and attitudes toward vision loss. In keeping with the results of our study, 71% of adults in the KAP study ranked loss of eyesight a 10 on a scale of 1 to 10, with 10 having the greatest impact on their daily living.[37]

These findings underscore the importance of good eyesight to most and that having good vision is key to one's overall sense of well-being, irrespective of ethnic or racial demographic. A study by Brown and Barrett[38] examined the relationship between visual impairment and quality of life in older people. These authors stated that to many individuals, loss of vision may signify loss of independence. Individuals with blindness or other visual impairment may be perceived as having to rely on others for basic life needs, including bathing, cooking meals, or housekeeping. Second, individuals with blindness may be more likely to have decreased income. Independently, visual impairment may cause or worsen financial hardship. Third, visual impairment, including blindness, is associated with social isolation, decreased social integration, and increased social avoidance. These authors proposed that individuals with visual impairment may feel as though they have less control over their life circumstance.[38] Persons with greater visual impairments have been shown to have a decreased quality of life, linked to a perception of having less control over their environment,[38-40] supporting our findings that respondents across all ethnic and racial backgrounds listed blindness high among most-feared ailments.

Although all demographics in the US adult population surveyed ranked vision loss highly among most feared conditions, African American respondents ranked blindness as the worst possible ailment, more feared than AIDS/human



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immunodeficiency virus and cancer. Owsley and colleagues[23] reported similar findings in a cohort of older African American individuals who were reported to prioritize eye care and placed a high value on good vision for overall well-being. Our survey result regarding African American individuals may be related to findings that African American individuals are more likely to experience visual impairment, including blindness, than white individuals, not only from conditions such as glaucoma and diabetic retinopathy, but also from potentially correctable conditions such as refractive error or cataract.[24-32] Specifically, prevalence of visual impairment from eye diseases among older African American individuals is 2 times higher than that of white individuals.[24-32]

The 2006 KAP study reported that Asian, African American, and non-white Hispanic individuals were more knowledgeable about eye disease and more likely to have their eyes examined than Hispanic adults.[37] Similarly, this study showed that Hispanic adults are the ethnic group least likely to have heard of common eye conditions such as age-related macular degeneration or diabetic eye disease. This finding is particularly concerning in that older Latino adults with diabetes or self-reported eye disease had a higher incidence of vision loss when followed over a 4-year period.[41]

This study has several limitations. While the survey was designed by individuals with expertise in these methods, no formal construct validity testing was performed. Further, a limitation inherent to polling data is the possibility of sampling error. In polling, it is possible that the data obtained are not reflective of the opinions of the entire population and therefore must be interpreted with caution in extrapolating the opinions of poll respondents as applicable to all individuals within the United States. However, this study, with its large number of respondents and minority oversampling, does seek to overcome this limitation. Surveys, including online surveys, such as the one used in this study, are subject to risk of sampling bias. A diversified sampling design was used to minimize any potential recruitment or participation bias. It is also possible that some questions may have been biased owing to phrasing or influenced by preceding questions. The survey design attempted to minimize this bias by asking the general health questions, such as the questions pertaining to the worst diseases of conditions, before participants were asked detailed questions about vision. However, certain questions could be perceived as "leading questions." For instance, the question relating to national research expenditures informed respondents that "The federal government spends on average $2.10 per person each year on eye and vision research." Providing this total on a per-person basis, rather than a national total, may have influenced respondents to view this as a lower amount. Thus, this question in particular should be considered when interpreting results. Also, the survey on insurance questions does not address whether individuals understood their insurance coverage, eg, whether their medical insurance covered ophthalmologic examinations. Additionally, this cross-sectional survey aimed to present data from Americans across multiethnic backgrounds but was conducted only in English, missing the opportunity to reflect attitudes of non-English-speaking Americans.

## Conclusions

This contemporary and comprehensive survey suggests that most Americans across all ethnic and racial groups describe losing eyesight as having the greatest impact on their daily life when ranked against other conditions including loss of limb, memory, hearing, or speech. This study and its findings are consistent with the large body of previously published literature demonstrating the enormous value that humans place on their vision. For the first time, to our knowledge, these cross-sectional data are presented from a multiethnic sample of Americans and show that Americans support resource allocation dedicated to the research for prevention of vision loss.


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*Concept and design:* Bressler, Wittenborn, Jorkasky.
*Acquisition, analysis, or interpretation of data:* Scott, Bressler, Ffolkes, Wittenborn.
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