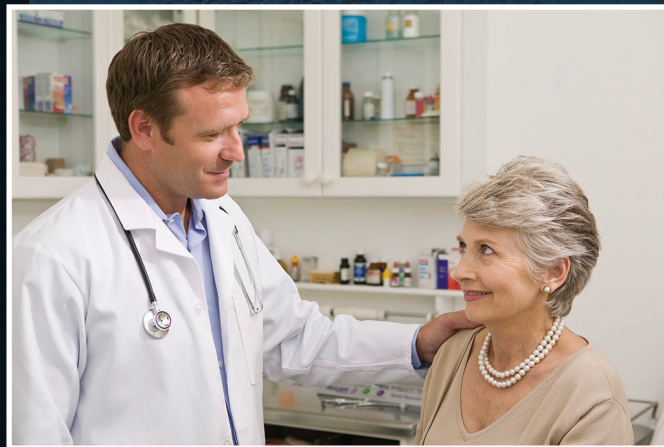
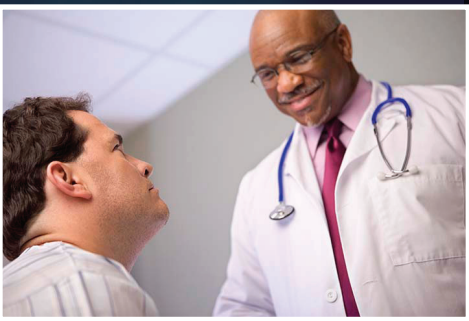


Primary Care Physicians and Eye Health: Results of a National Web-Based Survey



ABSTRACT

BACKGROUND & OBJECTIVES

Undetected and untreated eye diseases and conditions are major public health problems that can lead to vision loss and blindness. The objective of the study was to gather and analyze what primary care physicians know about vision health and disease and their attitudes, opinions, and practices regarding the counseling and treatment of their patients.

METHODS:

The data were collected using a face-valid 69-question Web-based survey that included 17 questions specific to vision health. A random sample of 1,500 physicians was drawn from the Epocrates Honors Panel (a verified panel of 142,000 physicians). Physicians were screened to include only those who have been practicing medicine in the United States for at least three years and actively see patients.

RESULTS:

Forty-eight percent of invited physicians responded to the survey. The respondent sample was very similar to published statistics regarding American physicians (e.g., race, ethnicity, and gender). Only 51 percent of physicians believe they have adequate knowledge to advise their patients on vision health. Further, only 58 percent believe they can identify patients at higher risk for eye disease. Conversely, nearly all physicians who treat patients with diabetes more frequently discuss eye health and disease with their patients, counsel their patients regarding the complications that diabetes presents for eye health and disease, and encourage eye regular examinations.

DISCUSSION:

Findings from this research reveal a need and an opportunity to better educate primary care physicians with regard to eye health and disease including how to recognize patients at higher risk of blindness and how to best counsel and refer their patients to seek vision care—both those currently practicing medicine as well as those who have yet to graduate from medical school.

Key Words: Eye Health, Eye Disease; Primary Care Physician; Vision Care, Vision Health

BACKGROUND & OBJECTIVES:

Eye diseases such as diabetic retinopathy, glaucoma, cataract, and age-related macular degeneration (AMD) cause blindness and impaired vision in millions of Americans.^{(1), (2)} With the aging of the U.S. population, the growing prevalence of eye disease will continue to be a major public health problem that can lead to blindness and reduced quality of life, unless these diseases can be detected early and treated in a timely manner. Many causes of visual impairment are readily diagnosed, and at least 40 percent of blindness and visual impairment is treatable or preventable.⁽¹⁾ Diabetic retinopathy, the most common ocular complication of diabetes mellitus, is a leading cause of new cases of blindness in the U.S. population aged 20 to 74.⁽³⁾ It is estimated that 40.8 percent of adults aged 40 and older with diabetes have diabetic retinopathy and 8.2 percent have advanced, vision-threatening retinopathy.⁽⁴⁾ Glaucoma, a leading cause of blindness worldwide, is a group of eye diseases that can damage the optic nerve and result in vision loss and blindness. It is estimated that primary open-angle glaucoma, the most common type of glaucoma, affects 2.2 million U.S. citizens.^{(5), (6), (7)} AMD is a disease that gradually destroys sharp, central vision. The overall prevalence of AMD in the U.S. population aged 40 and older is estimated at 1.5 percent, with 1.8 million individuals affected.⁽⁸⁾ Cataract, a clouding of the lens in the eye, is one of the leading causes of treatable blindness in the world; and an estimated 20.5 million Americans aged 40 or older have cataract in either eye.⁽⁹⁾ Because they see their patients on a regular basis, primary care physicians are in a unique position to prevent loss of vision and blindness. Adults express a great deal of confidence in their primary care provider to assist them with their healthcare issues, including eye care.⁽¹⁰⁾ Primary care physicians can manage systemic diseases that impact eye health and encourage patients to undergo periodic evaluation by eye care professionals and receive needed eye care.⁽¹¹⁾ Although primary care physicians serve as the access point into the healthcare system for many patients with eye problems, physicians generally lack the training, resources, and time to perform all of the elements of the basic eye examination.⁽¹²⁾

The primary objective of this study was to determine primary care physicians' knowledge, attitudes, and practices regarding eye health and disease by systematically examining what primary care physicians report knowing, believing, and practicing about vision and eye health with their patients.

METHODS:

In August 2007, DocStyles—a periodic Web-based survey with primary care physicians and pediatricians—was fielded with an eye health supplement. The survey sample was drawn from Epocrates Honors Panel, an opt-in, verified panel of 142,000 physicians. A random sample of eligible physicians was selected from their main database to match the American Medical Association (AMA) master file proportions for age, gender, and region. Prior to fielding the survey, the National Eye Institute was consulted to develop and review eye health and disease survey items. Invitations were prepared with a link to the Web-based survey hosted by *OpenVenue*. Quotas were set to reach 1,000 primary care physicians, 250 pediatricians, and 250 obstetricians/gynecologists. Physicians received an honorarium of \$55 for completing the survey. Physicians were screened to include only those who practice in the United States, actively see patients, work in an individual, group, or hospital practice, and who have been practicing medicine for at least 3 years. Respondents were not required to participate and could exit the survey at any time.

This DocStyles survey was comprised of 69 questions, some with multiple subparts, designed to provide insight into physicians' attitudes and counseling behaviors on a variety of health issues and to assess their use of health information sources. The eye health component of this survey consisted of 17 questions assessing the physicians' attitudes and opinions, patient information and counseling, and sources of information followed by eight demographic questions. The DocStyles survey has been administered to tens of thousands of physicians since its first use earlier this decade. No reliability and validity information is available or published in the literature.

RESULTS:

Of the 3,115 physicians invited to participate in the DocStyles survey, 1,502 completed the entire survey (two survey responses were unusable for an effective sample of 1,500 and a response rate of 48%). The sample mirrored recent published statistics (<http://www.statehealthfacts.org>; AAMC Data Warehouse: Minority Physician Database, Applicant-Matriculant file and AMA Physician Masterfile) for American physicians (e.g., 35% females; 3% African American; 16% Asian; 70% Caucasian). Further, a 48% response rate is as high—or higher—than most physician survey efforts completed in the last five years. Forty respondents

did not complete the entire survey, 32 were disqualified based on the screener questions, 528 logged in to take the survey but were terminated due to filled quotas, and 1,013 did not respond to the invitation. Table 1 shows the demographic characteristics of the respondent physician sample. Please note that pediatricians were not asked any of the 17 eye health questions on the survey.

Table 1: Characteristics of Responding Physicians

| Characteristic | n=1,500 |
|--|-----------------|
| Age | |
| Average (range) | 44 (30–77) |
| Gender | |
| Male | 64% |
| Female | 36% |
| Ethnicity | |
| Hispanic | 4% |
| Non-Hispanic | 96% |
| Race | |
| Asian | 18% |
| African American | 3% |
| White | 74% |
| Native Hawaiian or other Pacific Islander | <1% |
| Native American and Alaskan Native | <1% |
| Other | 4% |
| Income of Patient Population Served | |
| Very poor to poor | 3% |
| Poor to lower middle class | 13% |
| Lower middle class to middle class | 37% |
| Middle class to upper middle class | 43% |
| Upper middle class to affluent | 5% |
| Type of Practice | |
| Individual | 19% |
| Group | 68% |
| Hospital or clinic | 13% |
| Specialty | |
| Family/General practitioner | 34% |
| Internist | 32% |
| Pediatrician | 17% |
| OB/Gyn | 17% |
| Years Practicing Medicine | |
| Average (range) | 14 years (3–42) |

PHYSICIAN KNOWLEDGE:

More than 8 of every 10 physicians report knowing that many eye diseases (such as diabetic retinopathy, glaucoma, and AMD) do not have early warning signs or symptoms. However, only 6 of every 10 physicians report they can identify patients at higher risk for eye disease and only just over half of the surveyed physicians believe they have adequate knowledge to advise their patients on eye health. Table 2 presents physician responses to selected knowledge questions.

Table 2: Physician Knowledge Regarding Eye Health (n=1250^a)

| Survey Item | Strongly Agree or Agree | Neither Agree nor Disagree | Strongly Disagree or Disagree |
|--|-------------------------|----------------------------|-------------------------------|
| Many eye diseases have no symptoms | 82% | 15% | 4% |
| Can identify patients at higher risk for eye disease | 58% | 28% | 14% |
| I have adequate knowledge to advise my patients on vision health | 51% | 30% | 20% |

^a Pediatricians (n=250) were not asked these questions.

PHYSICIANS' ATTITUDES AND PRACTICES REGARDING EYE HEALTH AND DISEASE:

More than half of all physicians believe that it is their role to talk with patients about their vision and eye health and encourage them to get vision screenings and dilated eye exams. More than 6 of every 10 physicians report talking with patients about vision and eye health and believe that encouraging patients to get a dilated eye exam is their responsibility. Further, more than 6 of every 10 physicians report that they talk with patients about their vision and eye health even when patients do not bring it up themselves. Table 3 presents responses to selected items regarding physician beliefs and practices.

Table 3: Physicians' Practices Regarding Patient Vision and Eye Health (n=1250^d)

| Survey Item | Strongly Agree or Agree | Neither Agree nor Disagree | Strongly Disagree or Disagree |
|--|-------------------------|----------------------------|-------------------------------|
| It is the optometrist's or ophthalmologist's responsibility to talk to patients about eye health, not the physician's responsibility. | 9% | 23% | 68% |
| I only talk to my patients about their vision or eye health if they bring it up. | 19% | 18% | 63% |
| Encouraging patients to get a dilated eye exam is my responsibility. | 67% | 20% | 13% |
| Patients are asked if they have a family history of any eye disease when they complete their medical history forms. | 44% | 17% | 39% |
| Survey Item | Very Likely or Likely | Unlikely | Very Unlikely |
| I am likely to recommend that my patients see an eye care professional (optometrist or ophthalmologist) for an eye exam, regardless of whether they have any vision problems or not. | 72% | 22% | 6% |

PHYSICIANS' PRACTICES REGARDING EYE SCREENINGS AND EXAMS:

Many physicians report counseling their patients about vision and eye health, but relatively few report performing eye screenings or referring patients for dilated eye exams. Slightly more than one-third of physicians surveyed (35%) reported that they performed a basic eye screening with less than 10 percent of their patients, or none at all, while conducting a routine general physical examination. Conversely, only 27% reported they had performed a basic eye screening with more than 50% of their patients. Additionally, slightly more than one-quarter of physicians (27%) surveyed reported that they referred less than 10 percent of their patients, or none at all, for a dilated eye exam. And only 16% reported they referred more than 50% of their patients for a dilated eye exam. Table 4 presents physicians' responses to practice questions regarding eye screenings and exams.

Table 4: Physicians' Practices Regarding Basic Eye Screening and Dilated Eye Exams (n=1250^d)

| Survey Item | Percentage of Physicians |
|---|--------------------------|
| Proportion of patients that had a basic eye screening performed as a part of a general physical examination during the past 12 months | |
| None | 17% |
| <10% | 18% |
| 10 - 30% | 20% |
| 31% - 50% | 18% |
| >50% | 27% |
| Proportion of patients referred to have a dilated eye exam during the past 12 months | |
| None | 10% |
| <10% | 17% |
| 10 - 30% | 34% |
| 31% - 50% | 23% |
| >50% | 16% |

^d Pediatricians (n=250) were not asked these questions.

COUNSELING PATIENTS WITH DIABETES:

In general, primary care physicians counsel their patients with diabetes regarding vision and eye health. With regard to patients that have diabetes, among the surveyed primary care physicians, more than 8 of 10 physicians report talking with their patients about eye health and more than 9 of 10 report talking with their diabetes patients about diabetic eye disease such as diabetic retinopathy. Nearly 9 of 10 physicians report providing counseling to patients with diabetes about eye complications and more than 9 of 10 report patients with diabetes should have their eyes examined every year. Table 5 presents physicians' responses to selected survey questions regarding patients with diabetes.

Table 5: Physician Vision and Eye Health Practices With Diabetes Patients (n=1250^d)

| Survey Item | Strongly Agree or Agree | Neither Agree nor Disagree | Strongly Disagree or Disagree |
|---|-------------------------|----------------------------|-------------------------------|
| I often talk to my patients with diabetes about their eye health. | 83% | 9% | 7% |
| Patients with diabetes should have their eyes examined every year. | 94% | 5% | 1% |
| I only talk with my patients with diabetes about diabetic eye disease, such as diabetic retinopathy, if they bring it up. | 11% | 11% | 78% |
| Survey Item | Very Likely or Likely | Unlikely | Very Unlikely |
| I am likely to talk to patients I see with diabetes about diabetic eye disease. | 92% | 5% | 3% |

MEDICAL INFORMATION SOURCES:

Because only half of all physicians surveyed report they have adequate knowledge of vision health, we wanted to know, if information were available, where physicians report getting their information. More than half of physicians report getting their medical information most frequently from professional journals (77%), medical websites (62%), continuing medical education (58%), professional medical societies (51%), and scientific meetings (50%). These venues may hold promise for providing physicians with important vision health information. Table 6 presents responses to questions regarding sources for physicians' medical information.

Table 6: Where Physicians Get Their Medical Information (n=1250^d)

| Source | Percent of All Physicians |
|--------------------------------|---------------------------|
| Professional journals | 76.7% |
| Medical websites | 62.2% |
| Continuing medical education | 57.6% |
| Professional medical societies | 51.4% |
| Scientific meetings | 49.7% |
| Educational booklets/brochures | 31.6% |
| Podcasts | 11.0% |
| Magazines or newsletters | 10.9% |
| TV | 4.1% |
| Newspapers | 2.8% |
| None | 2.6% |
| Radio | 1.5% |

^d Pediatricians (n=250) were not asked these questions.

DISCUSSION:

Primary care physicians can influence patient behavior and play a critical role in maintaining and improving the eye health of their patients.^{(2),(13)} To assist in the management of eye health and diseases, primary care physicians should understand the natural history of eye diseases, know how to recognize those persons at risk of developing severe vision loss, and be able to interpret the earliest symptoms of the disease.⁽¹⁴⁾ In fact, recent research from NEI shows that almost all adults (96%) say they would be somewhat or very likely to have their eyes examined if their primary care physician suggested they do so.⁽¹⁰⁾

Primary care physicians can also educate patients about eye diseases and refer patients promptly so that suitable treatment can be started, if indicated.⁽¹⁵⁾ To enhance the benefits that can be achieved with therapy for eye diseases such as diabetic retinopathy, glaucoma, cataract, and AMD, it is important to increase awareness among primary care physicians and their patients.

Research shows that primary care physician recommendations to stop smoking cigarettes is one of the most effective factors in promoting smoking cessation.⁽¹⁶⁾ In addition, the significance of primary care physician recommendations and impact on patient screenings, especially in cancer, is well-observed.^{(17), (18), (19), (20)} Such involvement in promoting eye health and the appropriate receipt of eye care and examinations is likely to be equally effective.

This survey notes that 20 percent of primary care physicians report not having adequate knowledge to advise patients regarding eye health and disease even though 39 percent did ask about family history regarding eye disease. This finding reveals an opportunity with regard to increasing primary care physician knowledge of eye disease and confidence in identifying patients at higher risk for eye disease. Further, additional training for medical students⁽²¹⁾ and practicing primary care physicians⁽²²⁾ is needed to better identify patients at higher risk for eye disease and advise their patients on eye health.

Patient education is also an area of increasing importance. However, low health literacy is a problem that can reduce the effectiveness of patient education. Additionally, because primary care physicians responding to the survey indicated that their preferred sources of information are professional journals, medical websites, and continuing medical education, the fact sheets following this article are designed to provide primary care physicians as well as patients with key facts regarding eye health and disease. The authors recommend that physicians read and share the physician's fact sheet and distribute the patient fact sheet to their patients.

LIMITATIONS:

Limitations of the present study can be addressed in future surveys on this topic. First, the sampling methodology that was used for the survey may not have produced a truly random national sample. For instance, previous studies of American physicians indicated a higher percentage of men and a lower percentage of physicians who self-identify as internists or family practitioners. Thus, the

findings from this study may not be representative of the entire population of American physicians. Second, there are currently no published studies regarding the validity or reliability of the DocStyles survey items or the survey as a whole. Given the fact that this survey has been administered to tens of thousands of physicians over the past nearly 10 years, it is surprising that there is no substantive literature regarding the reliability and validity of the DocStyles survey. Until the survey authors publish this information, it is difficult to confirm the strength of the results of the survey. Third, a number of eye health questions were not asked of pediatricians. Given the importance of eye screenings and recommendations from pediatricians to eye care professionals for the vision health of children, not asking these types of questions of pediatricians leaves a gap in our knowledge regarding what pediatricians know and practice regarding vision health among children in America.

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WHAT SHOULD PHYSICIANS KNOW ABOUT EYE HEALTH?

Physicians can help protect their patients from vision loss or blindness by recognizing risk factors associated with common eye diseases and recommending they see an eye care professional for a comprehensive dilated eye examination. Eye diseases often have no early warning signs or symptoms. However, with early detection, treatment and appropriate follow-up care, vision loss and blindness from eye disease can be prevented or delayed. Talk to all your patients about their eye health, especially those at higher risk for AMD, cataract, diabetic retinopathy, and glaucoma.

AGE-RELATED MACULAR DEGENERATION (AMD)

AMD is a leading cause of vision loss in Americans age 60 and older, which gradually destroys sharp, central vision. Dry AMD occurs when the light-sensitive cells in the macula slowly break down. Wet AMD occurs when abnormal blood vessels behind the retina start to grow under the macula.

Symptoms: Neither dry nor wet AMD cause pain. For dry AMD, the most common early sign is blurred vision. For wet AMD the classic early symptom is that straight lines appear crooked.

Risk Factors: The greatest risk factor is age. Others risks include smoking, family history, and race, with Caucasians being more likely to lose vision from AMD.

Detection: Encourage all patients over 50 to have a comprehensive dilated eye examination every year.

In some cases, AMD advances so slowly that people notice little change in their vision. In others, the disease progresses faster and may lead to a loss of vision in both eyes.

CATARACT

A cataract is a clouding of the lens in the eye. It can occur in either or both eyes. It cannot spread from one eye to the other. By the age of 80, more than half of all Americans either have a cataract or have had cataract surgery.

Symptoms: Cloudy or blurry vision, colors seem faded, glare from lights, poor night vision, double vision or multiple images in one eye, or frequent prescription changes to glasses or contact lenses.

Risk Factors: Most cataract are related to aging. Other risk factors include having diabetes, personal behaviors such as smoking or alcohol use, or prolonged exposure to sunlight.

Detection: Encourage all patients over 50 to have a comprehensive dilated eye examination every year.

DIABETIC RETINOPATHY

Diabetic retinopathy is the most common diabetic eye disease. It is caused by changes in the blood vessels of the retina. One in every 12 people with diabetes aged 40 and older has vision-threatening diabetic retinopathy.

Symptoms: No signs or symptoms in its early stages.

Risk Factors: All people with diabetes (type 1, type 2 or gestational) are at risk. The longer a person has diabetes, the more likely he or she is to develop retinopathy. Controlling blood glucose levels, blood pressure and cholesterol can prevent or delay the progression of diabetic retinopathy.

Detection: Patients with diabetes should have a comprehensive dilated eye examination at least once a year. Patients with proliferative retinopathy can reduce their risk of blindness by 95 percent with timely treatment and appropriate follow-up care.

GLAUCOMA

Glaucoma is a group of diseases, defined by damage to the optic nerve and can lead to blindness. The intraocular pressure may or may not be elevated.

Symptoms: There are often no early warning signs or symptoms.

Risk Factors: African Americans over the age of 40, everyone over the age of 60 (especially Mexican Americans), and people with a family history are at higher risk.

Detection: Patients at higher risk should have a comprehensive dilated eye examination every 1 to 2 years. Early detection and treatment is the best way to control the disease. Left untreated, glaucoma can lead to blindness.

National Eye Institute (NEI) www.nei.nih.gov.

The National Eye Institute is part of the National Institutes of Health (NIH) and is the federal government's lead agency for vision research that leads to sight-saving treatments and plays a key role in reducing visual impairment and blindness.

National Eye Health Education Program (NEHEP) www.nei.nih.gov/nehep.

NEHEP is a program established by NEI to ensure that vision is a health priority by translating eye and vision research into public and professional education programs.

AGE-RELATED MACULAR DEGENERATION (AMD)

- AMD is a disease that gradually destroys sharp, central vision.
- The greatest risk factor is age, but other risk factors include:
 - **Smoking.** Smoking may increase the risk of AMD.
 - **Race.** Whites are much more likely to lose vision from AMD than African Americans.
 - **Family history.** Those with immediate family members who have AMD are at a higher risk of developing the disease.
- AMD does not cause pain.

CATARACT

- A cataract is a clouding of the lens in the eye that affects vision.
- The risk of cataract increases as you get older. Other risk factors for cataract include:
 - Certain diseases such as diabetes.
 - Personal behavior such as smoking and alcohol use.
 - Environmental issues such as prolonged exposure to sunlight.
- The most common symptoms of a cataract are:
 - Cloudy or blurry vision.
 - Colors seem faded.
 - Glare. Headlights, lamps, or sunlight may seem too bright. A halo may appear around lights.
 - Poor night vision.
 - Double vision or multiple images in one eye. (Symptom may clear as the cataract gets larger.)
 - Frequent prescription changes in your eyeglasses or contact lenses.

DIABETIC EYE DISEASE

- Diabetic eye disease is a complication of diabetes that can lead to vision loss or blindness.
- All people with diabetes, type 1 or 2, should have a comprehensive dilated eye examination at least once a year or as suggested by their eye care professional.
- Diabetic eye disease has no warning signs. Finding and treating the disease early, before it causes vision loss or blindness, is the best way to prevent vision loss or blindness.
- The longer a person has diabetes, the greater his/her risk of developing diabetic eye disease.

GLAUCOMA

- Glaucoma is a group of diseases that can damage the eye's optic nerve.
- People at higher risk for glaucoma include African Americans over the age of 40, everyone over the age of 60 (especially Mexican Americans), and people with a family history of glaucoma.
- Glaucoma often has no early warning signs.
- People at higher risk should have a comprehensive dilated eye examination every 1 to 2 years.
- Early detection and treatment of glaucoma, before it causes major vision loss, is the best way to control the disease.
- Left untreated, glaucoma can lead to permanent vision loss or blindness.

For more information about diabetic eye disease, age-related macular degeneration, glaucoma, cataract, or other eye health diseases and conditions, visit the **National Eye Institute (NEI)** www.nei.nih.gov or call (301) 496-5248.