Racial Differences in the Prevalence of Age-related Macular Degeneration

The Baltimore Eye Survey

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Objective: To determine the prevalence of age-related macular degeneration (AMD) and signs of age-related maculopathy in a population-based sample of blacks and whites 40 years of age or older from East Baltimore.

Design: Cross-sectional population-based study.

Participants: A total of 5308 black and white subjects received a screening eye examination that included fundus photography.

Main Outcome Measures: Stereoscopic color fundus photographs were graded for the presence and severity of drusen, pigmentary abnormalities, geographic atrophy, and choroidal neovascularization in the macula.

Results: Drusen $\geq 64\mu$m were identified in about 20% of individuals in both groups, but large drusen ($>125\mu$m) were more common among older whites (15% for whites versus 9% for blacks over 70). Pigmentary abnormalities were also more common among older whites (7.9% for whites versus 0.4% for blacks over 70). Age-related macular degeneration was more prevalent among whites than blacks. The prevalence of AMD was 2.1% among whites over 70 years of age. No cases of AMD were detected among 243 black subjects in this age group. Logistic regression adjusting for age, sex and smoking (current, former, or never) detected an odds ratio of 4.4 (95% confidence interval: 1.5–12.4) for whites with AMD compared with blacks.

Conclusion: Although drusen are common in both blacks and whites over the age of 40, more severe forms of age-related maculopathy and late AMD are more prevalent in older whites. *Ophthalmology 1999;106:1049–1055*

Age-related macular degeneration (AMD) is the leading cause of blindness in older white populations.[1,2] Accurate estimates of disease prevalence are needed to help plan the delivery of eye care services and to help determine the potential impact of clinical interventions as they become available. Only one population-based survey (from Barbados) has reported the prevalence of AMD among blacks.[3] Although AMD is the third leading cause of bilateral blindness among blacks in East Baltimore (after cataract and glaucoma), little is known about the prevalence of the signs of AMD among this population.

The prevalence of AMD has been found to increase with age in all population-based studies, with reported rates of AMD among whites estimated at 1 per 1000[4] to 2 per 1000[5,6] among individuals in their 50s, to about 55 per 1000[7] to 70 per 1000[6] for those 75 years of age and older. A similar increase in prevalence in older age groups was noted in blacks in Barbados, but lower rates of AMD (neovascular or geographic AMD) were found (after adjusting for age) than have been found in the white populations studied. A significant limitation of comparisons across studies is that differences in study design and study definitions can markedly alter prevalence estimates. No study to date has had sufficient numbers of blacks and whites to make direct comparisons between the two populations. This report describes the prevalence of age-related maculopathy (ARM) and AMD in a population-based study of black and white residents of East Baltimore.

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Methods

Study Population

The Baltimore Eye Survey was a population-based prevalence survey of ocular disease among people 40 years of age or older in

East Baltimore, Maryland. Data were collected from January 1985 through November 1988. The design of the study has been detailed in previous publications.[1,8,9] In summary, 5308 black and white subjects received a screening examination that consisted of measurements of height, weight, blood pressure, pulse, refraction, visual acuity, visual fields, applanation tonometry, simultaneous stereoscopic fundus photography of the optic disc and macula, and a detailed personal interview. Specifically, all subjects received subjective refraction with the AO Reichert SR-IV Programmed Subjective Refractor (AO Reichert Scientific Instruments, Buffalo, NY). This result was refined as needed. Those unable to be autorefracted underwent subjective refraction with or without retinoscopy. Visual acuity was measured at 4 m using the Bailey-Lovie charts described by Ferris et al[10] and supplemented by a specially designed illiterate "E" chart and backlighted box.[11] Two 30-degree simultaneous stereoscopic photographs were obtained (one focusing on the optic disc and one on the macula) using the Topcon Simultaneous Stereo Fundus Camera (Model TRC-SS, Topcon, Tokyo, Japan) after maximal dilation. Photographs were mounted on a plastic sheet and read on a fluorescent light box with a stereo viewer.

Stratified sampling was used to obtain approximately equal numbers of blacks and whites. A total of 7265 individuals were selected, with 2913 whites and 2395 blacks participating in the screening examination. Younger age was significantly associated with participation (84% of those in the 40- to 44-year age group compared with 69.2% of those over 85; $P < 0.001$). Blacks were more likely than whites to participate (83.5% versus 75.7%).[9]

All screened subjects were offered stereoscopic fundus photography. Nine hundred forty-seven (17.8%) participants did not receive a photograph, and an additional 54 individuals had photographs unreadable for neovascular AMD in both eyes (total without readable photographs for neovascular AMD, 18.9%). Seventy-seven percent of black subjects and 86% of white subjects had photographs taken. The disparity was greater for those over 70 years of age, with 52% of black subjects and 73% of white subjects having photographs. Of the remaining individuals, 399 had only one eye with a readable photograph. Diagnoses for these individuals were based on the single available photograph. Whites were more likely than blacks to have photos (odds ratio [OR] = 2.39 [2.05 to 2.77]). Those without photos had poorer visual acuity after adjusting for age and race ($P < 0.001$).

Fundus Photography Grading

All photographs were read independently in a masked fashion using a standard protocol described previously.[9] Photographic quality (focus/clarity, field definition, and quality of stereo) and gradability were scored. The most severe grade in either eye was used to classify an individual. A circular area 3000μm in diameter centered on the foveola was graded for drusen, with the largest size recorded as ≤ 63 μm, 64–125 μm, or > 125 μm. Focal pigment, geographic atrophy, and nongeographic atrophy were also graded in comparison with standard photographs.[12] Geographic and nongeographic atrophy were assessed for area covered as < 175 μm or ≥ 175 μm in greatest linear dimension. Choroidal neovascular lesions were graded as none, questionable, scar, other findings consistent with choroidal neovascularization (e.g., subretinal hemorrhage), or present but unable to determine the specifics (due to photographic quality). All photographs identified as either geographic or neovascular AMD were reviewed by a senior ophthalmologist whose reliability was confirmed in a previous study.[12]

Definitions of Age-related Maculopathy and Age-related Macular Degeneration

Both conditions were defined according to the international classification and grading system proposed by the International ARM Epidemiological Study Group.[5] Age-related maculopathy was defined by the presence of the following abnormalities in the macular area: soft drusen ≥ 64 μm or hypo- or hyperpigmentation of the retinal pigment epithelium (RPE) associated with drusen < 64 μm in the absence of AMD. Hypopigmentation and hyperpigmentation had to be greater than the standard photograph to qualify as present. Age-related macular degeneration was defined as the presence of either geographic atrophy or neovascular AMD. Geographic atrophy was defined as the presence of geographic atrophy in the central 3000 μm in the presence of drusen or pigmentary abnormalities in the absence of neovascular features. Photos with any geographic atrophy (even if less than the standard photograph) were analyzed as having geographic atrophy from AMD. Neovascular AMD included RPE detachments, subretinal hemorrhages, visible choroidal neovascular lesions, or scars consistent with prior choroidal neovascularization in the absence of other retinal disorders that could have caused the scarring. All fundi with a scar consistent with AMD (defined as a scar in the presence of drusen or RPE abnormalities consistent with AMD) were analyzed as having neovascular AMD. Photographic grades were used only in estimating the prevalence of AMD. Individuals diagnosed as clinically blind from AMD were not counted as having AMD if no photographs were gradable for them (5 of 9 individuals bilaterally blind from a clinical diagnosis of AMD did not have photos).

Statistical Analysis

Data for the prevalence of ARM and AMD were analyzed separately for blacks and whites. All bivariate analyses used chi-square or Fisher's exact test where appropriate. Tests for trend among ordered groups were performed using Cuzick's extension of the Wilcoxon rank sum test.[13] Multiple logistic regression was used to model the odds of having a gradable photo as well as the racial differences in prevalence of AMD (in order to control for age and sex). Direct adjustments for age were performed using the minimum variance method.[14] Overall prevalence rates for East Baltimore were adjusted to the age and race distribution of the original 7265 individuals who were invited to participate.

Results

Age was strongly associated with increasing prevalence of drusen, with rates ranging from about 10% among blacks and whites in their 40s, to over 30% among those in their 80s ($P < 0.001$; Table 1). Although the prevalence of any drusen ≥ 64 μm was similar among blacks and whites, large drusen greater than 125 μm were significantly more common among whites over 70 years of age (15.2% versus 9.0%; $P = 0.02$). This increased prevalence of large drusen among whites compared with blacks over the age of 70 remained after controlling for sex, body mass index, hypertension, and residual age differences ($P = 0.02$).

The prevalence of focal retinal pigment was higher among whites than among blacks (age-adjusted prevalence, 2.5% versus 0.9%; $P < 0.001$; Table 2). As with large drusen, this difference was greatest among individuals over 70 (7.89% versus 0.41%; $P < 0.001$). The increased prevalence of focal pigmentary abnormalities among whites was not confounded by sex, body mass index, hypertension, or residual age differences.

Table 1. Age-specific Prevalence of Drusen by Size and Race within 1500 μm of the Foveal Center in the Worse Eye

	Blacks							Whites						
		64–125 μm		> 125 μm		Total ≥ 64 μm			64–125 μm		> 125 μm		Total ≥ 64 μm	
Age (yrs)	n	Cases	Prevalence	Cases	Prevalence	Cases	Prevalence	n	Cases	Prevalence	Cases	Prevalence	Cases	Prevalence
40–49	548	40	7.3	18	3.3	58	10.6	512	37	7.2	7	1.4	44	8.6
50–59	577	69	12.0	27	4.7	96	16.6	578	87	15.1	35	6.1	122	21.1
60–69	475	78	16.4	40	8.4	118	24.8	817	131	16.0	69	8.4	200	24.5
70–79	202	46	22.8	16	7.9	62	30.7	511	73	14.3	74	14.5	147	28.8
80+	41	202	17.1	6	14.6	13	31.7	100	16	16.0	19	19.0	35	35.0
Total	1843	240	13.0	107	13.7	347	18.8	2518	344	13.7	204	18.8	546	21.7
Age-adjusted* (%)			13.7		6.2		19.9			13.2		7.1		20.3

* All age-adjusted differences in prevalence, $P > 0.2$.

No difference between blacks and whites in the prevalence of hypopigmentation of the RPE was noted, even in the older age groups ($P > 0.1$). Age-adjusted prevalence rates for any pigmentary abnormalities were markedly lower than those for drusen for both blacks and whites.

The age-adjusted prevalence of ARM did not differ among whites and blacks (20.2% versus 19.8%; $P = 0.47$). This was largely driven by the similar prevalence of drusen ≥64 μm. More advanced macular disease, however, was much more common among whites than among blacks. The age-adjusted prevalence of geographic atrophy among whites was 0.62%. Neovascular macular degeneration was more prevalent among older whites (0.18% among those under age 60 versus 2.24% over the age of 70; $P < 0.001$; Table 3). Seven of 100 whites over 80 years of age had either geographic or neovascular AMD (95% confidence interval [CI], 2.86–13.89). None of the 41 blacks with photographs in this age group had AMD (95% CI, 0–8.99). Logistic regression adjusting for age and sex detected an OR of 4.1 (1.4–11.6) for whites with AMD compared with blacks. Only four cases of AMD were diagnosed among blacks, with two cases each of neovascular and geographic AMD. A total of 35 cases were identified among whites, 15 neovascular and 20 geographic.

After projecting the age- and race-specific results from those with gradable photos to the entire population, the prevalence ratio (white: black) was 10.7 for geographic atrophy, 8.8 for neovascular AMD, and 10.1 for total AMD (Table 4). These ratios are generally higher than the age-adjusted comparisons because the eligible white population was considerably older, and participation in screening was inversely associated with age, especially among whites.[9]

Discussion

The Baltimore Eye Survey was a population-based study of eye disease that sampled approximately equal numbers of blacks and whites from the same community. This approach allowed for estimation of disease prevalence directly comparing these two groups. In addition, masking the photographic interpretation minimized bias in comparing rates of disease in blacks and whites.

Photos were obtained less often in blacks and in individuals with poorer vision. The simultaneous stereo camera required a minimum of 6 mm of pupillary dilation. Older subjects and those with darker irides were less likely to dilate to this extent, resulting in a greater number of photographs that could not be graded for drusen characteristics

Table 2. Age-specific Prevalence of Pigmentary Abnormalities by Race within 1500 μm of the Foveal Center in the Worse Eye*

	Blacks							Whites						
		Focal Pigment		RPE Hypopigment		Any RPE Abnormality			Focal Pigment		RPE Hypopigment		Any RPE Abnormality	
Age (yrs)	n	Cases	Prevalence	Cases	Prevalence	Cases	Prevalence	n	Cases	Prevalence	Cases	Prevalence	Cases	Prevalence
40–49	548	2	0.36	4	0.73	4	0.73	512	5	0.98	8	1.56	10	1.95
50–59	577	3	0.52	5	0.87	7	1.21	578	5	0.87	6	1.04	9	1.56
60–69	475†	9	1.90	14	2.95	17	3.58	817	19	2.33	12	1.47	28	3.43
70–79	202‡	1	0.50	4	1.98	5	2.48	511	33	6.46	18	3.52	40	7.83
80+	41	0	0.0	1	2.44	1	2.44	100	15	15.0	7	7.00	15	15.0
Total	1843	15	0.81	28	1.52	34	1.84	2518	77	3.06	51	2.03	102	4.05
Age-adjusted (%)			0.86		1.64		1.99			2.51§		1.82‖		3.47§

RPE = retinal pigment epithelium.

* Definition excludes cases with geographic atrophy.

† 462 gradable for focal pigmentary abnormalities.

‡ 201 gradable for focal pigmentary abnormalities.

§ Significant difference in prevalence between blacks and whites ($P < 0.001$).

‖ No difference in prevalence between blacks and whites ($P = 0.66$).

Table 3. Age-specific Prevalence of Age-related Macular Degeneration (AMD) by Race within 1500 μm of the Foveal Center in the Worse Eye

	Blacks							Whites						
		Geographic AMD		*Neovascular AMD*		*Total AMD*			*Geographic AMD*		*Neovascular AMD*		*Total AMD*	
Age (yrs)	*n*	*Cases*	*Prevalence*	*Cases*	*Prevalence*	*Cases*	*Prevalence*	*n*	*Cases*	*Prevalence*	*Cases*	*Prevalence*	*Cases*	*Prevalence*
40–49	548	0	0.0	0	0.0	0	0.0	512	0	0.0	0	0.0	0	0.0
50–59	577	1	0.17	1	0.17	2	0.35	578§	1	0.17	2	0.35	3	0.52
60–69	475*	1	0.21	1	0.21	2	0.42	817‖	6	0.73	0	0.0	6	0.73
70–79	202†	0	0.0	0	0.0	0	0.0	511¶	9	1.76	8	1.63	15	2.94
80+	41‡	0	0.0	0	0.0	0	0.0	100**	4	4.00	5	5.62	7	7.00
Total	1843	2	0.21	2	0.11	4	0.22	2518	20	0.79	15	0.61	31	1.23
Age-adjusted (%)			0.10		0.11		0.21			2.51††		1.82‡‡		3.47††

* 473 photos gradable for neovascular AMD.

† 201 photos gradable for neovascular AMD.

‡ 37 photos gradable for neovascular AMD.

§ 577 photos gradable for neovascular AMD.

‖ 805 photos gradable for neovascular AMD.

¶ 492 photos gradable for neovascular AMD.

** 89 photos gradable for neovascular AMD.

†† Significant difference in age-adjusted prevalence between blacks and whites ($P < 0.001$).

‡‡ Significant difference in age-adjusted prevalence between blacks and whites ($P = 0.02$).

or increased pigment. The decreased field captured by this camera system also decreased the chance of identifying drusen or other RPE abnormalities in the posterior pole but not in the central macula. However, other epidemiologic studies have suggested that few additional cases are identified when grading a field larger than the one captured by the camera system.[15,16] A major reason for difficulty in obtaining photos in individuals with poor vision was cataract. Another explanation is that poor vision precludes good fixation, making photography difficult. This may explain why individuals diagnosed as clinically blind or visually impaired by AMD were less likely to have photographs even after adjusting for age and race (OR = 0.60, 95% CI 0.34 – 1.06).

Drusen ≥ 64 μm were common in both blacks and whites, which is consistent with findings from other prevalence studies. The prevalence of drusen in the central 3000 μm in the Beaver Dam Eye Study by age category is almost identical to that found for whites in the present study (Table 5). Similar rates were reported from the Rotterdam and Blue Mountains eye surveys.[6,7] The overall prevalence of drusen ≥ 64 μm among blacks in Baltimore was similar to that found in Barbados after adjusting the reported Barbados rates to age distribution of the Baltimore black population (Table 6).

Table 4. Adjusted Prevalence (%)* of Age-related Maculopathy (ARM)† and Age-related Macular Degeneration (AMD)‡ Among Blacks and Whites in the Baltimore Eye Survey

	White	Black	Prevalence Ratio§
ARM	22.53	19.91	1.1
Geographic atrophy	1.00	0.09	10.7
Neovascular AMD	0.91	0.10	8.8
Total AMD	1.91	0.19	10.1

* Excludes cases of AMD.

† Adjusted to the intended black and white survey populations.

‡ AMD combines geographic atrophy and neovascular AMD.

§ Ratio of prevalence among whites versus blacks.

Signs of more advanced maculopathy, including drusen > 125 μm and pigmentary abnormalities, were more common among Baltimore whites, especially in the older age groups. This is consistent with the finding that AMD was more prevalent among the white population, with an age- and sex-adjusted odds ratio for AMD of 4.1. No cases of AMD were identified in blacks or whites under 50 years of age, and only four cases of AMD were identified among blacks, all of whom were individuals between 50 and 70 years of age. Age-related macular degeneration was prevalent among older whites, with 7% of those over the age of 80 having this condition. This is likely a conservative estimate given that prevalence was determined on the basis of photographic data only and individuals with blinding or visually impairing AMD were 40% as likely to have photographs available for grading after adjusting for race and age.

Whites in Baltimore had much lower rates of focal pigmentary abnormalities than whites in Beaver Dam (Table 7). The rates of RPE hypopigmentation were similar. The most likely explanation for this disparity is that the grading and camera systems in the two centers were different. Other possibilities include (1) other retinal abnormalities, such as pattern dystrophies of the RPE or central serous chorioretinopathy masquerading for pigmentary abnormalities of AMD (although both studies were cognizant of this possibility during grading); or (2)

Table 5. Presence of Drusen within 1500 μm of the Foveal Center

	Baltimore Whites							Beaver Dam Whites						
		Drusen 64–125 μm		*Drusen > 125 μm*		*Total Drusen ≥ 64 μm*			*Drusen 64–125 μm*		*Drusen > 125 μm*		*Total Drusen ≥ 64 μm*	
Age (yrs)	*n*	*Cases*	*Prevalence*	*Cases*	*Prevalence*	*Cases*	*Prevalence*	*n*	*Cases*	*Prevalence*	*Cases*	*Prevalence*	*Cases*	*Prevalence*
43–54	624	67	10.7	16	2.6	83	13.3	1504	128	8.5	36	2.4	164	10.9
55–64	716	106	14.8	52	7.3	158	22.1	1300	166	12.8	83	6.4	249	19.2
65–74	759	126	16.6	85	11.2	211	27.8	1242	213	17.2	147	11.8	360	29.0
75–86	262	35	13.4	48	18.3	83	31.7	717	152	21.2	187	26.1	339	47.3

real differences in these populations. This isolated difference is not consistent with the similarities found in the rest of the data. Looking at the same central region of the macula, the prevalence among Baltimore whites of ARM (drusen, pigmentary abnormalities of the RPE, or both), geographic, and neovascular AMD was similar to that found in the Beaver Dam study (Table 8). This is consistent with the relatively homogeneous findings for AMD prevalence found in Beaver Dam, Blue Mountains, and Rotterdam. Such consistent findings support the hypothesis that if there are specific environmental exposures that result in AMD, then they are likely common to individuals living in different locations throughout the world.

Blacks in Baltimore had lower rates of pigmentary abnormalities, RPE hypopigmentation, and AMD than blacks in Barbados (Table 6). Possible explanations include (1) different grading techniques; (2) different camera systems; (3) different selection biases in the two studies so that blacks with disease were more or less likely to be included; (4) other retinal abnormalities such as pattern dystrophies of the RPE or central serous chorioretinopathy masquerading for pigmentary abnormalities from AMD; and (5) real differences in these two black populations. Different photograph grading is an unlikely explanation because similar protocols were used at a single reading center in the two studies. The increased prevalence of AMD in Barbados blacks compared with Baltimore blacks also may be due to an increased prevalence of pattern dystrophy leading to geographic atrophy or other underlying causes of choroidal neovascularization (CNV) (such as infectious causes) masquerading as CNV from AMD. Our finding that individuals with vision-impairing AMD were less likely to have photographs indicates that we are underestimating the true prevalence among blacks. This finding also may explain some of the differences found between Baltimore and Barbados blacks. The fact that we included individuals with only one photograph available also may have led to an underestimate of the rate in blacks. Finally, the Barbados population may indeed have higher rates of macular degeneration, just as they had a higher prevalence of glaucoma than black Americans.[17]

How does one explain the racial disparity in the prevalence of more severe maculopathy, especially among the older age groups? Other studies in the United States have suggested that neovascular AMD may be more prevalent in whites than blacks.[18–20] The fact that no cases of AMD were found in blacks over the age of 70 raises the possibility that there is a potential survivor bias. Blacks who develop AMD may be more likely to die than whites with similar findings. Associations with AMD and cardiovascular diseases could be the mechanism through which this occurs.[21,22] Several studies have failed to identify a relationship between AMD and cardiovascular disease, however,[23,24] and the Beaver Dam Eye Study found no decrease in survival in individuals with AMD.[25] Although increased death among blacks with AMD could explain some of the difference, the increased risk of death among blacks with AMD as well as large drusen and pigmentary changes is unlikely to be the sole cause for the large difference in prevalence documented in this study. Another explanation is that the photographic readers were unmasked to race, resulting in a biased reading of the photos. In addition, one can imagine that a darker fundus might obscure, rather than highlight, small drusen

Table 6. Adjusted Prevalence (%) of Signs, Age-related Maculopathy (ARM)* and Age-related Macular Degeneration (AMD)† Among Black Subjects from the Baltimore Eye Survey and the Barbados Eye Study‡

	Drusen ≥ 64 μm	**Focal Pigment**	**RPE Hypopigment**	**ARM**	**AMD**
Baltimore	13.77	0.80	1.60	19.91	0.19
Barbados	11.38	4.62	3.45	26.25	0.57
Prevalence ratio§	1.21	0.17	0.46	0.76	0.33

* ARM excludes cases of AMD.

† AMD combines geographic atrophy and neovascular AMD.

‡ Adjusted to the Baltimore Eye Survey Population that was intended for screening.

§ Comparing Baltimore blacks with Barbados blacks.

Table 7. Presence of Pigmentary Abnormalities within 1500 μm of the Foveal Center in the Baltimore Eye Survey and the Beaver Dam Eye Survey

	Baltimore Whites					Beaver Dam Whites				
		Focal Pigment		*RPE Hypopigment*			*Focal Pigment*		*RPE Hypopigment*	
Age (yrs)	*n*	*Cases*	*Prevalence*	*Cases*	*Prevalence*	*n*	*Cases*	*Prevalence*	*Cases*	*Prevalence*
43–54	624	5	0.8	8	1.3	1505	96	6.4	2	0.1
55–64	716	12	1.7	5	0.7	1303*	138	10.6	13	1.0
65–74	759	32	4.2	20	2.6	1255†	170	13.6	26	1.8
75–86	262	25	9.5	15	5.7	749‡	181	24.3	58	7.7

* 1302 gradable for focal pigment.

† 1251 gradable for focal pigment.

‡ 744 gradable for focal pigment.

or early pigmentary abnormalities. Small drusen prevalence rates were equal in the two groups, however, and one might expect blonde fundi, not darker fundi, to obscure these features more often. While these are potential biases, we doubt that readers could consistently identify the race of individuals, and late stages of AMD should be equally likely to be detected regardless of race. An alternative explanation is that the racial differences found in this study are confounded by other risk factors. We did perform analyses in which hypertension, body mass index, sex, and age were included in a logistic regression model, with no change in our estimate of the racial differences. Smoking (ever/never smoked), a known risk factor for AMD, was equally common among blacks and whites in this study and could not have acted as a confounder.

The most likely explanation for the racial differences found in this study is that whites are genetically predisposed to more severe maculopathy than blacks. Both blacks and whites were equally likely to have smaller drusen, and pigmentary changes were equally common among the younger age groups. Only in the older whites were the more severe signs more prevalent. Determining what enables blacks to stay free of late disease while whites develop it at increasingly higher rates in older age needs further study.

Table 8. Adjusted Prevalence (%)* of Age-related Maculopathy (ARM) and Age-related Macular Degeneration (AMD)† among Whites from Baltimore and Beaver Dam

	ARM	Geographic Atrophy	Neovascular AMD	Total AMD
Baltimore Eye Survey	22.25	0.95	0.80	1.48
Beaver Dam	20.64	0.53	1.31	1.84
Prevalence ratio‡	1.08	1.82	0.61	0.80

* Adjusted to the intended white survey population of the Baltimore Eye Survey excluding individuals under the age of 43 and over the age of 87 (not evaluated in the Beaver Dam study).

† AMD combines geographic atrophy and neovascular AMD.

‡ Comparing Baltimore whites with Beaver Dam whites.

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