Supplemental Online Content

Killeen OJ, De Lott LB, Zhou Y, et al. Population prevalence of vision impairment in US adults aged 71 years and older: findings from the National Health and Aging Trends Study. *JAMA Ophthalmol*. Published online January 12, 2023. doi:10.1001/jamaophthalmol.2022.5840

This supplemental material has been provided by the authors to give readers additional information about their work.

© 2023 American Medical Association. All rights reserved.

eTable 1: Comparison of unweighted sample characteristics of analytic sample and excluded participants

	Analytic sample (n=3026)	**Missing vision data**[a] (n=159)	**Did not complete part 2 of interview**[b] (n=203)	***P***[c]
Age groups, N (%)				<.001
71-74 years	420 (13.9%)	8 (5.0%)	13 (6.4%)	
75-79 years	900 (29.7%)	32 (20.1%)	50 (24.6%)	
80-84 years	768 (25.4%)	25 (15.7%)	45 (22.2%)	
≥ 85 years	938 (31.0%)	94 (59.1%)	95 (46.8%)	
Sex (self-reported)				
Male, N (%)	1287 (42.5%)	50 (31.5%)	73 (36.0%)	
Female, N (%)	1739 (57.5%)	109 (68.5%)	130 (64.0%)	.01
Race/ethnicity, N (%)				
Black, non-Hispanic Respondent	597 (19.7%)	44 (27.7%)	40 (19.7%)	.01
Hispanic Respondent	136 (4.5%)	12 (7.6%)	16 (7.9%)	
Other, non-Hispanic Respondent	68 (2.3%)	5 (3.1%)	7 (3.5%)	
White, non-Hispanic Respondent	2191 (72.4%)	93 (58.5%)	134 (66.0%)	
Education, N (%)				
Less than high school	457 (15.1%)	44 (27.7%)	41 (20.2%)	<.001
High school	766 (25.3%)	49 (30.8%)	46 (22.7%)	
Some college, no degree	660 (21.8%)	30 (18.9%)	46 (22.7%)	
College graduate or more	1111 (36.7%)	31 (19.5%)	64 (31.5%)	
Income, N (%)[d]				
0 to <$21,000	743 (24.6%)	66 (41.5%)	78 (38.4%)	<.001
$21,000 to <$40,000	711 (23.5%)	50 (31.5%)	40 (19.7%)	
$40,000 to <$75,000	764 (25.3%)	30 (18.9%)	46 (22.7%)	
$75,000 or more	807 (26.6%)	12 (7.6%)	39 (19.2%)	

a. Respondents who were alive, completed the SP interview, and completed the part 2 SP interview which includes sensory tests, but are missing ≥1 vision test
b. Respondents who were alive and completed Part 1 but not Part 2 of the NHATS interview (all tablet-based measures were contained in Part 2)
c. P-values based on chi-squared tests
d. Quartiles based on income distribution of sample

© 2023 American Medical Association. All rights reserved.

eTable 2: Weighted prevalence of vision impairment for ages 71-79 and ages 80+

Age group (years)	71-79 years	80 years and older
Any distance VI (%)[1]	6.4 (5.0, 7.8)	16.7 (14.1, 19.3)
Mild distance VI (%)	3.8 (2.8, 4.9)	8.2 (6.5, 10.0)
Moderate distance VI (%)	2.2 (1.4, 3.0)	6.8 (5.2, 8.4)
Severe distance VI/Blind (%)	0.4 (0.0, 0.8)	1.6 (0.7, 2.5)
Near VI (%)[2]	17.3 (15.0, 19.7)	30.5 (27.5, 33.5)
Contrast sensitivity impairment		
<1.55 LogCS (%)	16.1 (13.3, 18.9)	31.0 (28.3, 33.7)
>1 SD below mean (%)	6.0 (4.2, 7.8)	16.5 (14.7, 18.3)

VI: vision impairment, logCS: log contrast sensitivity, SD: standard deviation

[1]Mild distance VI: >0.30-0.48 logMAR, Snellen equivalent <20/40-20/60; moderate distance VI: >0.48-1.0 logMAR, Snellen equivalent <20/60-20/200; severe distance VI: >1.0-1.3 logMAR, Snellen equivalent <20/200-20/400; blind: logMAR > 1.3, Snellen equivalent approximately <20/400
[2]Near VI: near visual acuity worse than N6, which corresponds to approximately >0.3 logMAR or Snellen equivalent <20/40

© 2023 American Medical Association. All rights reserved.

eTable 3a-c: Multivariable linear regression models predicting distance and near visual acuity and contrast sensitivity as a function of socioeconomic and demographic characteristics

eTable 3a: Survey weighted multivariable linear regression model predicting distance visual acuity (logMAR).

Variable	Regression coefficient (95% CI)	p-value
Age group:		
71-74 years	Reference	
75-79 years	0.03 (0.01, 0.05)	0.001
80-84 years	0.05 (0.03, 0.08)	<.001
≥ 85 years	0.12 (0.09, 0.14)	<.001
Sex: male (reference is female)	0.002 (-0.016, 0.021)	0.81
Race:		
Black, non-Hispanic Respondent	0.01 (-0.01, 0.04)	0.37
Hispanic Respondent	-0.03 (-0.06, 0.01)	0.18
Other, non-Hispanic Respondent	0.04 (-0.02, 0.10)	0.18
White, non-Hispanic Respondent	Reference	
Education:		
Less than High School	0.05 (0.01, 0.08)	0.01
High School diploma	-0.004 (-0.024, 0.016)	0.68
Some college, no degree	-0.01 (-0.03, 0.02)	0.62
College graduate or more	Reference	
Income		
0 to <$21,000	0.06 (0.03, 0.08)	<.001
$21,000 to <$40,000	0.04 (0.01, 0.06)	0.004
$40,000 to <$75,000	0.01 (-0.02, 0.03)	0.57
$75,000 or more	Reference	

logMAR: logarithm of minimum angle of resolution

© 2023 American Medical Association. All rights reserved.

eTable 3b: Survey weighted multivariable linear regression model predicting near visual acuity (logMAR).

Variable	Regression coefficient (95% CI)	p-value
Age group:		
71-74 years	Reference	
75-79 years	0.03 (0.01, 0.05)	0.02
80-84 years	0.05 (0.03, 0.07)	<.001
≥ 85 years	0.11 (0.09, 0.14)	<.001
Sex: male vs. female	0.01 (-0.01, 0.03)	0.18
Race:		
Black, non-Hispanic Respondent	0.01 (-0.01, 0.04)	0.33
Hispanic Respondent	0.01 (-0.03, 0.06)	0.63
Other, non-Hispanic Respondent	0.03 (-0.01, 0.08)	0.16
White, non-Hispanic Respondent	Reference	
Education:		
Less than High School	0.06 (0.03, 0.08)	<.001
High School diploma	0.01 (-0.02, 0.03)	0.67
Some college, no degree	0.03 (0.0003, 0.05)	0.048
College graduate or more	Reference	
Income		
0 to <$21,000	0.06 (0.03, 0.08)	<.001
$21,000 to <$40,000	0.04 (0.01, 0.06)	0.002
$40,000 to <$75,000	0.01 (-0.01, 0.03)	0.26
$75,000 or more	Reference	

logMAR: logarithm of minimum angle of resolution

© 2023 American Medical Association. All rights reserved.

eTable 3c: Survey weighted multivariable linear regression model predicting contrast sensitivity (logCS).

Variable	Regression coefficient (95% CI)	p-value
Age group:		
71-74 years	Reference	
75-79 years	-0.05 (-0.07, -0.02)	<.001
80-84 years	-0.07 (-0.10, -0.05)	<.001
≥ 85 years	-0.18 (-0.21, -0.15)	<.001
Sex: male vs. female	-0.03 (-0.05, -0.01)	0.01
Race:		
Black, non-Hispanic Respondent	-0.02 (-0.05, 0.01)	0.29
Hispanic Respondent	-0.03 (-0.08, 0.02)	0.25
Other, non-Hispanic Respondent	-0.05 (-0.12, 0.03)	0.20
White, non-Hispanic Respondent	Reference	
Education:		
Less than High School	-0.05 (-0.09, -0.003)	0.04
High School diploma	0.004 (-0.020, 0.027)	0.76
Some college, no degree	0.01 (-0.02, 0.04)	0.46
College graduate or more	Reference	
Income		
0 to <$21,000	-0.11 (-0.14, -0.07)	<.001
$21,000 to <$40,000	-0.05 (-0.08, -0.02)	0.003
$40,000 to <$75,000	-0.001 (-0.028, 0.026)	0.94
$75,000 or more	Reference	

logCS: log contrast sensitivity

© 2023 American Medical Association. All rights reserved.

eResults

In multivariable regression models (eTable 3), holding all other socio-economic and demographic variables constant, distance visual acuity was associated with age (compared to reference group of 71-74 years old, logMAR distance visual acuity increased by 0.03 [0.01, 0.05] for 75-79 year olds [p<0.001], 0.05 [0.03, 0.08] for 80-84 year olds [p<0.001], and 0.12 [0.09, 0.14] for those 85 and older [p<0.001]); education (compared to those with a college degree, logMAR distance visual acuity increased by 0.05 [0.01, 0.08] for those with less than a high school diploma [p=0.01]); and income (compared to reference group of $75,000 or more, logMAR distance visual acuity increased by 0.06 [0.03, 0.08] for 0 to <$21,000 [p<0.001] and 0.04 [0.01, 0.06] for $21,000 to <$40,000 [p=0.004]). Near visual acuity was associated with age (compared to reference group of 71-74 years old, logMAR near visual acuity increased by 0.03 [0.01, 0.05] for 75-79 year olds [p=0.02], 0.05 [0.03, 0.07] for 80-84 year olds [p<0.001], and 0.11 [0.09, 0.14] for those 85 and older [p<0.001]); education (compared to those with a college degree, logMAR near visual acuity increased by 0.06 [0.03, 0.08] for those with less than a high school diploma [p<0.001] and 0.03 [0.0003, 0.05] for those with some college [p=0.048]); and income (compared to reference group of $75,000 or more, logMAR near visual acuity increased by 0.06 [0.03, 0.08] for 0 to <$21,000 [p<0.001] and 0.04 [0.01, 0.06] for $21,000 to <$40,000 [p=0.002]). Contrast senstivity was associated with age (compared to reference group of 71-74 years old, logCS decreased by 0.05 [-0.07, -0.02] for 75-79 year olds [p<0.001], 0.07 [-0.10, -0.05] for 80-84 year olds [p<0.001], and 0.18 [-0.21, -0.15] for those 85 and older [p<0.001]); sex (compared to females, logCS decreased by 0.03 [-0.05, -0.01] for males [p=0.01]); education (compared to those with a college degree, logCS decreased by 0.05 [-0.09, -0.003] for those

© 2023 American Medical Association. All rights reserved.

with less than a high school diploma [p=0.04]); and income (compared to reference group of $75,000 or more, logCS decreased by 0.11 [-0.14, -0.07] for 0 to <$21,000 [p<0.001] and 0.05 [-0.07, -0.02] for $21,000 to <$40,000 [p=0.003]). Race and ethnicity were not significantly associated with distance visual acuity, near visual acuity, or contrast sensitivity in multivariable logistic regression models that contained other demographic and socioeconomic indicators (eTable 3).

© 2023 American Medical Association. All rights reserved.