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Baseline neuroticism and subsequent reporting of doctor- treated glaucoma in the Health and Retirement Study

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Article

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Abstract

Background

Personality has usually been measured after glaucoma diagnosis, limiting temporal interpretation. We examined whether baseline neuroticism was associated with subsequent survey reporting of doctor-treated glaucoma among older participants in the Health and Retirement Study (HRS).

Methods

This exploratory longitudinal analysis included HRS participants aged 65 years or older whose first psychosocial leave-behind assessment was in 2006 or 2008, who had no positive glaucoma report at or before baseline, and who had at least one later glaucoma assessment through 2020. Neuroticism was the standardized mean of four Midlife Development Inventory items, requiring at least three observed items in the primary analysis. The endpoint was the first subsequent respondent- or proxy-reported positive response to “Has a doctor ever treated you for glaucoma?” Observation intervals were split at fixed 2-year elapsed-time boundaries. Complementary log-log models included log segment duration as an offset, a fixed elapsed-time baseline hazard, age, sex, race/ethnicity, and education, with participant-clustered standard errors.

Results

The analysis included 7,217 participants, 1,067 first positive reports, and 61,833 person-years (median follow-up, 8.5 years). Of the events, 954 occurred at respondent interviews and 113 at proxy interviews. Each 1-SD higher neuroticism score was associated with a hazard ratio (HR) of 1.091 (95% CI, 1.025–1.161; P = .006). Reconstructing follow-up from respondent interviews only yielded HR 1.082 (95% CI, 1.013–1.156). Results were similar in the inverse-probability-of-censoring weighted attrition sensitivity (HR, 1.086; 95% CI, 1.018–1.159) and with the HRS guide-based two-of-four-item scoring rule (HR, 1.090; 95% CI, 1.024–1.160). In the healthcare-use complete-case sample, the HR was 1.076 before and 1.041 after adjustment for all measured general healthcare-use variables. Four- and 6-year landmark estimates were 1.072 (95% CI, 0.995–1.154) and 1.064 (95% CI, 0.972–1.166). Accounting for competing death, standardized 10-year probabilities at the 25th and 75th percentiles of neuroticism were 11.40% and 12.60%, a difference of 1.20 percentage points (95% CI, 0.25–2.13).

Conclusions

Higher baseline neuroticism was associated with a modestly higher rate of subsequent reporting of doctor-treated glaucoma in this selected HRS cohort. Attenuation after adjustment for general

healthcare use, depressive symptoms, and baseline eye-health measures leaves disease occurrence, detection, and reporting as unresolved explanations.

Introduction

Glaucoma is a progressive optic neuropathy and a major cause of irreversible blindness. Primary open-angle glaucoma, the predominant subtype in the United States, is often asymptomatic until advanced and is commonly identified through eye examination [1]. An estimated 4.22 million US adults were living with glaucoma in 2022, with prevalence increasing with age and differing across racial and ethnic groups [2]. In survey data, a report that a doctor has treated glaucoma may therefore reflect disease, examination opportunity, clinical recognition, communication, recall, and who answered the interview.

Personality may be associated with long-term health through behavioral, social, and physiologic pathways [3, 4]. Neuroticism has also shown small, service-specific associations with healthcare use [5], and classic work cautioned that symptom perception and reporting can complicate inferences about physical disease [6]. Proposed stress-related pathways in glaucoma remain hypotheses rather than mechanisms established by observational survey data [7].

Evidence specifically linking personality to glaucoma is limited. Existing personality studies have generally been small and cross-sectional, with personality measured after diagnosis or treatment [8–11]. Prospective studies have examined depression, loneliness, or social isolation rather than a stable personality trait, and their glaucoma definitions vary [12–15]. A British birth-cohort study used a composite eye-problem outcome rather than a glaucoma-specific endpoint [16], while genetic analyses have not supported a causal effect of negative-emotion phenotypes on glaucoma [17].

The HRS provides repeated health interviews and a psychosocial questionnaire, allowing a baseline personality measure to precede later glaucoma reports [18]. We examined whether baseline neuroticism was associated with the rate of a first subsequent survey report of doctor-treated glaucoma among HRS participants aged 65 years or older with no previous positive report. We also evaluated reporter type, the exposure scoring rule, fixed elapsed-time specification, attrition, household clustering, cardiometabolic adjustment, depressive symptoms, baseline eye health, general healthcare use, delayed-entry landmarks, and competing mortality.

Methods

Study design and data sources

HRS is a biennial longitudinal panel of US adults older than 50 years and their spouses [18]. We used the 2006 and 2008 Core interviews and psychosocial leave-behind questionnaires [19–21], the RAND HRS Longitudinal File 2020 Version 2 [22], Harmonized HRS Version D [23], and the HRS 2020 Tracker Final Version 1.0 [24]. Questionnaire and personality-scale documentation came from the HRS psychosocial guides and the Midlife Development Inventory report [19, 25, 26].

The analysis was exploratory. The continuous per-SD neuroticism contrast was designated as the primary exposure analysis; the remaining models were sensitivity or explanatory probes and were not adjusted for multiplicity.

Study population and follow-up

The index interview was each participant's first returned psychosocial leave-behind assessment in 2006 or 2008. Participants were eligible if they were aged 65 years or older, had the glaucoma item administered at index, had a constructible neuroticism score, had no positive glaucoma report at index or an earlier HRS wave, and had at least one later glaucoma assessment through 2020. The primary analytic cohort also required complete age, sex, race/ethnicity, education, and interview-date data.

Time zero was the index interview. Each observed assessment interval began at the preceding negative glaucoma assessment and ended at the next observed assessment. A missed interview could therefore produce an interval longer than 2 years. Follow-up ended at the first positive report or last observed negative assessment.

Neuroticism

The four neuroticism items were moody, worrying, nervous, and calm, with coding oriented so that higher values indicated higher neuroticism [19, 25, 26]. The primary score was the mean of at least three observed items and was standardized using the primary analytic cohort mean and SD. Its mean was 1.99 (SD, 0.59), range 1–4, and Cronbach's alpha was 0.703. A measurement sensitivity used the HRS guide's rule requiring at least two of four items. Because the 2006 and 2008 questionnaire administration also permitted proxy or nursing-home interviews and completion by someone other than the designated participant, we describe the exposure as neuroticism responses recorded in the HRS psychosocial questionnaire rather than unqualified self-reported neuroticism.

Survey-reported doctor-treated glaucoma

The HRS Core item asks, “Has a doctor ever treated you for glaucoma?” The primary endpoint was the first subsequent positive response after an initially negative history. We directly compared the harmonized indicator with the wave-specific raw Core items (KC101 through RC101) at baseline and in every analytic risk interval. All 7,217 baseline values were raw code 5 (“no”); all 1,067 event intervals were raw code 1 (“yes”); and all 28,691 non-event intervals were raw code 5, with no missing values or discordance in the analytic intervals.

The interview reporter indicator was audited at each event wave. Events could be reported by the participant or a proxy. A sensitivity analysis removed proxy interviews and reconstructed the sequence of negative and positive assessments using respondent interviews only. Because 13 participants with an

initial proxy-positive interview later reported a positive response themselves, the respondent-only reconstruction contained 967 rather than 954 events.

The endpoint does not provide a diagnosis date, clinical eye examination, intraocular pressure, optic-disc or visual-field assessment, imaging, glaucoma subtype, severity, or ophthalmology-specific encounter. It is therefore described as survey-reported or respondent-or-proxy-reported doctor-treated glaucoma, not clinical incidence or disease onset.

Covariates

The primary adjustment set comprised age at index (continuous), sex, race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, and non-Hispanic other), and education (less than high school, GED, high-school graduate, some college, and college or above). These covariates were selected for a parsimonious association model and are not asserted to remove all confounding.

A secondary cardiometabolic model additionally included smoking status, a spline for body mass index, diabetes, and hypertension. Separate probes added the baseline 8-item Center for Epidemiologic Studies Depression score, baseline self-rated eyesight and cataract history, or general healthcare-use variables. Healthcare-use variables comprised doctor-visit count, any visit, hospital admission, out-of-pocket medical spending, and diagnosed-condition count. They do not identify eye examinations or ophthalmology contact and may be confounders, ascertainment variables, or intermediates.

Primary statistical analysis

Glaucoma status was observed at interviews without a diagnosis date. We therefore used grouped person-time complementary log-log models [27, 28]. Each observed assessment interval was split at fixed elapsed-time boundaries of 0, 2, 4, 6, 8, and 10 years after index; follow-up beyond 10 years formed one final category. Each segment contributed its observed duration; an event was retained on the terminal segment ending at the first positive interview. Models included log segment duration as an offset and indicators for the fixed elapsed-time categories (0–2, > 2–4, > 4–6, > 6–8, > 8–10, and > 10 years) as the baseline hazard. The primary model estimated the HR per 1-SD higher neuroticism and adjusted for the primary covariates. Standard errors were clustered by participant [29].

We report two-sided P values and 95% confidence intervals. Analyses used complete cases for variables in each model.

Sensitivity and explanatory analyses

We repeated the primary model with standard errors clustered by household and with baseline age modeled using a three-degree-of-freedom natural spline. Measurement and reporter sensitivities used the HRS two-of-four-item neuroticism rule and respondent-only glaucoma interviews, respectively. A

leave-behind respondent-weighted sensitivity used the wave-specific 2006 or 2008 psychosocial weight; it did not apply the full HRS strata and primary-sampling-unit design and was not treated as a population-representative estimate.

For attrition, stabilized inverse-probability-of-censoring weights were estimated from the baseline-eligible cohort rather than assigning weight 1 to unmatched outcome intervals [30, 31]. The numerator included follow-up visits and baseline waves; the denominator additionally included the measured baseline predictors. Of 7,898 participants eligible at baseline after primary-covariate completion, 7,324 entered at least one modeled censoring risk set; 574 had no modeled follow-up opportunity, including participants who died before a possible reassessment. The weighted outcome analysis included 7,101 participants and 1,005 events. We truncated weights at the 1st and 99th percentiles and report weight-distribution, predicted-probability, and effective-sample-size diagnostics.

True 4- and 6-year landmark analyses split intervals at the landmark, restricted the risk set to participants under observation and without a previous positive report at that time, reset follow-up, and refitted the fixed elapsed-time model. These analyses differ from selecting complete observed intervals that merely ended after the threshold.

Competing mortality and absolute risk

Death was treated as a competing event for a later glaucoma report [32, 33]. Glaucoma-report and death hazards were estimated on the same fixed 2-year elapsed-time grid from 0 to 10 years. For participants who died first, vital-status follow-up could extend beyond the last negative glaucoma assessment to the recorded death; participants alive without a later eye assessment were censored at their last glaucoma assessment. Both cause models used this common risk-stop rule. Death was classified as first only when its available date strictly preceded the first positive interview; same-date ties were assigned to the positive interview because the interview occurred while the participant was alive. Cause-specific interval probabilities were converted to cumulative hazards and combined under a constant-within-bin hazard assumption. Ten-year cumulative probabilities were standardized over the cohort covariate distribution, with neuroticism set to the 25th or 75th percentile [32–34]. Confidence intervals were estimated from 2,000 baseline-household bootstrap samples [35].

Software and reporting

Analyses used R 4.6.0 and were reported with reference to STROBE [36].

Results

Cohort formation and follow-up

Among 14,649 participants with a first 2006 or 2008 leave-behind personality assessment, 9,362 were aged 65 years or older, 9,316 had the glaucoma item administered, 9,182 had a score under the primary three-of-four-item rule, 7,899 had no previous positive glaucoma report, 7,218 had a later assessment, and 7,217 had complete primary covariates (Fig. 1).

The mean age was 73.7 years (SD, 6.7), and 57.5% were women. Participants contributed 29,758 observed assessment intervals and 61,833 person-years. Median follow-up was 8.5 years (IQR, 4.8–12.2; maximum, 15 years). The 1,067 first positive reports corresponded to 17.3 reports per 1,000 person-years. At the event interview, 954 reports were obtained from respondents and 113 from proxies (Table 1).

Table 1
Cohort characteristics

Characteristic	Value
Participants, n	7,217
Neuroticism, mean (SD)	1.99 (0.59)
Neuroticism, Cronbach alpha	0.703
Age, mean (SD), years	73.7 (6.7)
Women, %	57.5
Race/ethnicity other than non-Hispanic White, %	18.5
Observed assessment intervals, n	29,758
Follow-up, median (IQR), years	8.5 (4.8–12.2)
First positive reports, n	1,067
Respondent-reported / proxy-reported events, n	954 / 113
Person-years	61,833
Reports per 1,000 person-years	17.3

Primary association

Each 1-SD higher baseline neuroticism score was associated with HR 1.091 (95% CI, 1.025–1.161; P=.006) for a first subsequent survey report of doctor-treated glaucoma (Table 2). The estimate was essentially unchanged with household-clustered inference (HR, 1.091; 95% CI, 1.024–1.162) or flexible baseline-age adjustment (HR, 1.090; 95% CI, 1.024–1.160).

Table 2
Primary fixed elapsed-time model

Exposure	n	Events	HR	95% CI	P value
Neuroticism, per 1 SD	7,217	1,067	1.091	1.025–1.161	.006

The model used fixed 2-year elapsed-time bins, log segment duration as an offset, and adjustment for baseline age, sex, four-category race/ethnicity, and education. Standard errors were clustered by participant.

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Reporter, measurement, weighting, and covariate sensitivities

Reconstructing follow-up using respondent interviews only included 6,965 participants and 967 first positive self-reports, including 13 participants whose primary first positive report had been proxy-reported; the HR was 1.082 (95% CI, 1.013–1.156; P=.020). Under the HRS two-of-four-item scoring rule, 7,243 participants and 1,070 events yielded HR 1.090 (95% CI, 1.024–1.160; P=.007). Excluding 94 participants whose psychosocial questionnaire was recorded as completed by someone other than the designated participant yielded HR 1.087 (95% CI, 1.021–1.158; P=.009).

The IPCW attrition sensitivity with truncated stabilized weights yielded HR 1.086 (95% CI, 1.018–1.159; P=.012) in 7,101 participants. The leave-behind respondent-weighted estimate was 1.093 (95% CI, 1.020–1.171; P=.012) among 7,112 participants. Additional smoking, body mass index, diabetes, and hypertension adjustment yielded HR 1.077 (95% CI, 1.010–1.147; P = .023) in 7,091 participants (Table 3).

Table 3
Measurement, reporter, inference, weighting, and cardiometabolic sensitivities

Analysis	n	Events	HR	95% CI	P value
Primary analysis	7,217	1,067	1.091	1.025–1.161	.006
Household-clustered standard errors	7,217	1,067	1.091	1.024–1.162	.007
Baseline age natural spline (3 df)	7,217	1,067	1.090	1.024–1.160	.007
HRS scoring rule, at least 2 of 4 items	7,243	1,070	1.090	1.024–1.160	.007
Excluding questionnaire completed by another person	7,123	1,056	1.087	1.021–1.158	.009
Respondent-interview-only reconstruction	6,965	967	1.082	1.013–1.156	.020
IPCW attrition sensitivity, 1st/99th percentile truncated	7,101	1,005	1.086	1.018–1.159	.012
Leave-behind respondent-weighted	7,112	1,054	1.093	1.020–1.171	.012
Cardiometabolic complete-case base	7,091	1,044	1.082	1.016–1.153	.014
Plus smoking, BMI, diabetes, and hypertension	7,091	1,044	1.077	1.010–1.147	.023

Ascertainment and overlapping-construct probes

In the healthcare-use complete-case sample, the minimally adjusted HR was 1.076 (95% CI, 1.010–1.148). It was 1.062 (95% CI, 0.996–1.133) after adjustment for log doctor visits and 1.041 (95% CI, 0.976–1.111) after all measured general healthcare-use variables were included. Among participants with at least seven doctor visits, the HR was 1.096 (95% CI, 1.006–1.195).

In the baseline CES-D complete-case sample, the HR changed from 1.096 (95% CI, 1.030–1.168) to 1.048 (95% CI, 0.980–1.121) after adjustment for depressive symptoms. After adjustment for baseline self-rated eyesight and cataract history, the HR was 1.053 (95% CI, 0.989–1.122). These models are explanatory sensitivity analyses: depressive symptoms overlap conceptually with neuroticism, and healthcare use or eye-health measures may partly reflect ascertainment or pathways rather than conventional baseline confounding (Table 4).

Table 4
Healthcare-use, depressive-symptom, and baseline eye-health probes

Analysis	n	Events	HR	95% CI	P value
Healthcare-use complete-case base	6,871	1,010	1.076	1.010–1.148	.024
Plus log doctor visits	6,871	1,010	1.062	0.996–1.133	.067
Plus all measured general healthcare-use variables	6,871	1,010	1.041	0.976–1.111	.224
Restricted to at least 7 doctor visits	3,531	542	1.096	1.006–1.195	.036
CES-D complete-case base	7,078	1,055	1.096	1.030–1.168	.004
Plus baseline CES-D	7,078	1,055	1.048	0.980–1.121	.172
Eye-health complete-case base	7,204	1,060	1.089	1.023–1.160	.008
Plus baseline eyesight and cataract history	7,204	1,060	1.053	0.989–1.122	.107

Healthcare use, depressive symptoms, and eye-health measures were not included in the primary model because their causal and ascertainment roles are ambiguous.

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Landmark and competing-risk analyses

At a 4-year landmark, 6,030 participants and 785 subsequent events contributed 34,640 person-years; the HR was 1.072 (95% CI, 0.995–1.154; P=.069). At a 6-year landmark, 4,921 participants and 529 events contributed 23,710 person-years; the HR was 1.064 (95% CI, 0.972–1.166; P=.181). The smaller point estimates do not establish temporal modification (Table 5).

Table 5
True delayed-entry landmark analyses

Analysis	n	Events	Person-years	HR	95% CI	P value
Primary, time zero at index	7,217	1,067	61,833	1.091	1.025–1.161	.006
4-year landmark	6,030	785	34,640	1.072	0.995–1.154	.069
6-year landmark	4,921	529	23,710	1.064	0.972–1.166	.181

Within 10 years, 843 first positive reports and 2,246 death-first events entered the common-grid competing-risk analysis; 2,471 cohort members had a recorded death within 10 years. The standardized probability of a first positive report was 11.40% (95% household-bootstrap CI, 10.50%–12.38%) at the 25th percentile of neuroticism and 12.60% (11.77%–13.47%) at the 75th percentile, a difference of 1.20

percentage points (0.25–2.13). Treating death as ordinary censoring yielded 13.70% and 15.50%, respectively, a difference of 1.80 percentage points (0.68–2.92). These are different estimands.

Across these analyses, the estimate for a 1-SD higher baseline neuroticism was materially unchanged in direction and remained close to that of the primary fixed elapsed-time model (Fig. 2).

Discussion

Principal findings

In this longitudinal HRS analysis, higher baseline neuroticism was associated with a modest increase in the rate of a first subsequent respondent- or proxy-reported history of doctor-treated glaucoma. The result was similar under respondent-only outcome reconstruction, the HRS-recommended exposure scoring rule, the IPCW attrition sensitivity, household clustering, flexible age adjustment, leave-behind respondent weighting, and cardiometabolic adjustment. Point estimates were smaller in true 4- and 6-year landmark analyses, but their confidence intervals overlapped the primary estimate and do not demonstrate that the association changes with time.

The healthcare-use, depressive-symptom, and baseline eye-health probes are central to interpretation. General healthcare-use adjustment moved the estimate toward the null, while the association remained positive among participants with frequent doctor contact. Adjustment for depressive symptoms or baseline eye-health measures also attenuated the estimate. These patterns are compatible with residual confounding, overlapping psychological measurement, detection or reporting processes, mediation through healthcare seeking, or combinations of these mechanisms. The present data cannot distinguish among them.

Comparison with previous evidence

Earlier personality studies were largely cross-sectional and used clinical glaucoma samples, so personality measured after diagnosis could reflect both antecedent disposition and the experience of treatment or visual loss [8–11]. Prospective studies of depression, loneliness, and social isolation have reported associations with subsequent glaucoma outcomes, but their exposures and ascertainment differ from those used here [12–15]. A broad composite eye outcome in a British birth cohort and genetic triangulation of negative-emotion phenotypes do not directly answer the HRS question [16, 17]. The present contribution is therefore temporal ordering for a narrow reporting-based endpoint, not proof that neuroticism is a glaucoma risk factor.

Interpretation

Neuroticism could be associated with behaviors or physiologic processes relevant to eye health, but no mechanism was measured here. It may also influence symptom vigilance, recall, willingness to report prior treatment, or healthcare seeking [5, 6]. General healthcare-use measures only partially address these possibilities because they do not identify eye examinations, optometry, or ophthalmology care.

Eye-care use varies with insurance, income, existing eye disease, education, functional status, cognition, and geographic access [37, 38], but those studies do not establish variation by neuroticism.

The attenuation after healthcare-use adjustment should not be described as robustness to healthcare utilization. Nor does it prove detection bias: doctor visits could be an ascertainment variable, a confounder, or part of a behavioral pathway from personality to clinical recognition. Similarly, the smaller landmark estimates may reflect delayed recognition of baseline disease, regression dilution of a once-measured personality score, fewer events, or residual selection; they do not confirm early concentration.

Strengths and limitations

Strengths include a clear temporal order, direct agreement between raw and harmonized glaucoma values in every analytic interval, explicit reporter auditing, common fixed elapsed-time bins, repeated outcome assessment, and sensitivity analyses addressing measurement, reporter type, attrition, household clustering, healthcare use, depressive symptoms, baseline eye health, delayed entry, and competing death.

Several limitations are important. First, the endpoint was a survey report of doctor treatment, not a clinical diagnosis or onset date. Undiagnosed, untreated, or unreported glaucoma at baseline could not be identified, and glaucoma subtype and severity were unavailable. Second, proxy and respondent reports may differ, although the respondent-only estimate was similar. Third, eye examinations and ophthalmology-specific utilization were unavailable; general doctor-use measures cannot isolate ophthalmic ascertainment. Validation studies show that self-reported eye disease can have limited sensitivity and does not substitute for examination-based classification [39, 40, 41], although their estimates should not be transferred directly to the HRS item. Fourth, the four-item neuroticism scale was measured once, had moderate internal consistency, and in a small minority could be completed by someone other than the designated participant; the completion-mode exclusion sensitivity was similar. Fifth, residual confounding remains, including incomplete measurement of family history, lifetime socioeconomic conditions, eye-care access, and clinical ocular risk. Sixth, requiring a returned psychosocial questionnaire, a later glaucoma assessment, and complete primary covariates selected a subset of HRS participants; the observed rate is not a national clinical incidence estimate. Seventh, censoring weights depend on measured predictors and the specified model, and their robust variance treated estimated weights as fixed. Finally, death and loss to follow-up are substantial in an older cohort, and the competing-risk absolute-risk calculation depends on interval and event-order assumptions.

Implications

The association is too small and too dependent on a reporting-based endpoint to support screening or treatment decisions. It motivates evaluation in cohorts combining validated personality assessment with standardized eye examinations, dated diagnoses, glaucoma subtype, and ophthalmology-specific utilization. Such data are needed to distinguish disease occurrence from detection and reporting.

Conclusion

Higher baseline neuroticism was associated with a modestly higher rate of subsequent reporting of doctor-treated glaucoma among selected HRS participants aged 65 years or older. The association attenuated in several ascertainment and overlapping-construct probes and should not be interpreted causally. Clinical ophthalmic cohorts are required to determine whether the finding reflects disease occurrence, detection, reporting, or a combination.

Abbreviations

HRS: The Health and Retirement Study

HR: hazard ratio

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the Declaration of Helsinki. The Health and Retirement Study (HRS) is sponsored by the National Institute on Aging (NIA U01AG009740) and is conducted by the University of Michigan. The HRS protocols were approved by the University of Michigan Institutional Review Board, and written informed consent was obtained from all participants. The present analysis used de-identified, publicly available HRS data; no additional identifiable information was accessed.[42]

Clinical trial number: not applicable.

Consent for publication

Not applicable

Availability of data and materials

Public-use HRS data are available to registered users under the HRS Conditions of Use.[43]

Competing interests

The authors declare that they have no competing interests.

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No funding was received for this study.

Authors' contributions

All authors (CL, JL, and TL) contributed to the conception and design of the study. CL contributed to the analysis and interpretation of data . All authors (CL, JL, and TL) read and approved the final manuscript.

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Figures

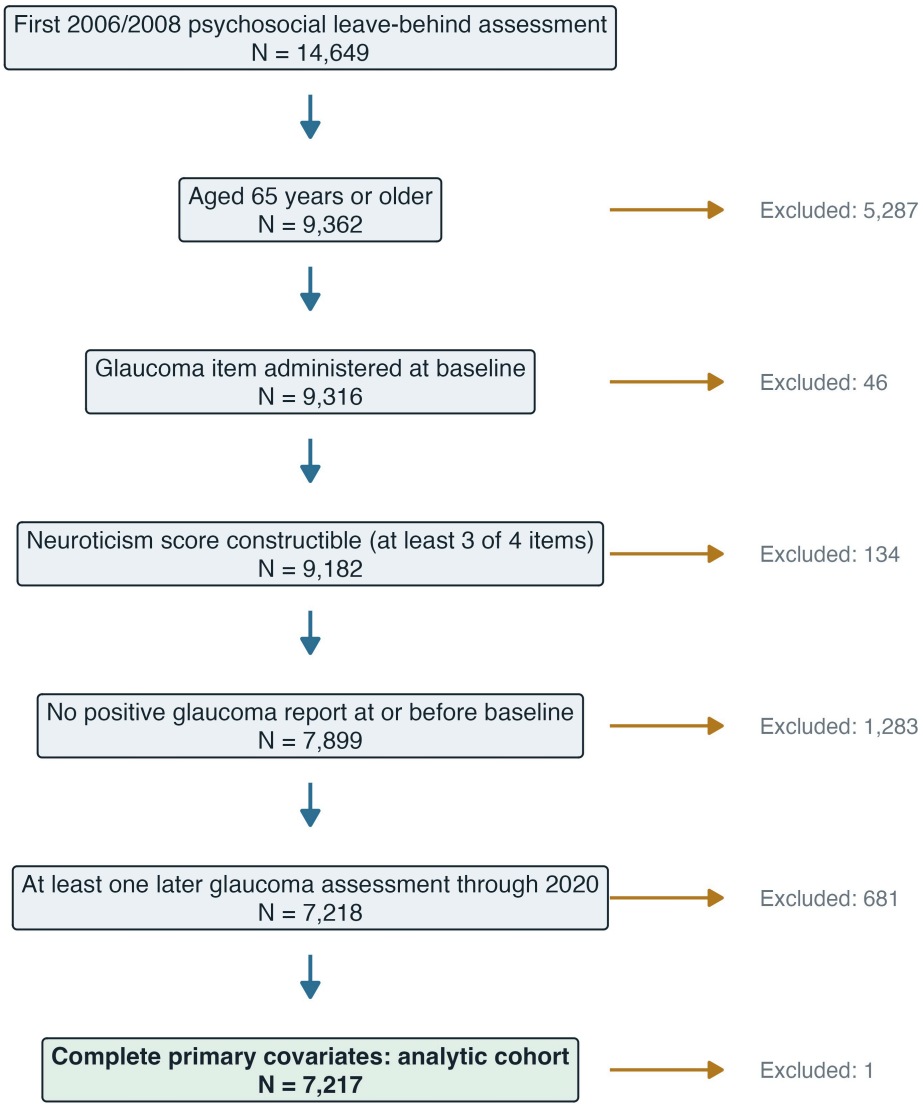


Figure 1

Cohort flow

Sequential formation of the primary analytic cohort from first 2006 or 2008 HRS psychosocial leave-behind assessment to 7,217 participants with a subsequent glaucoma assessment and complete primary covariates.

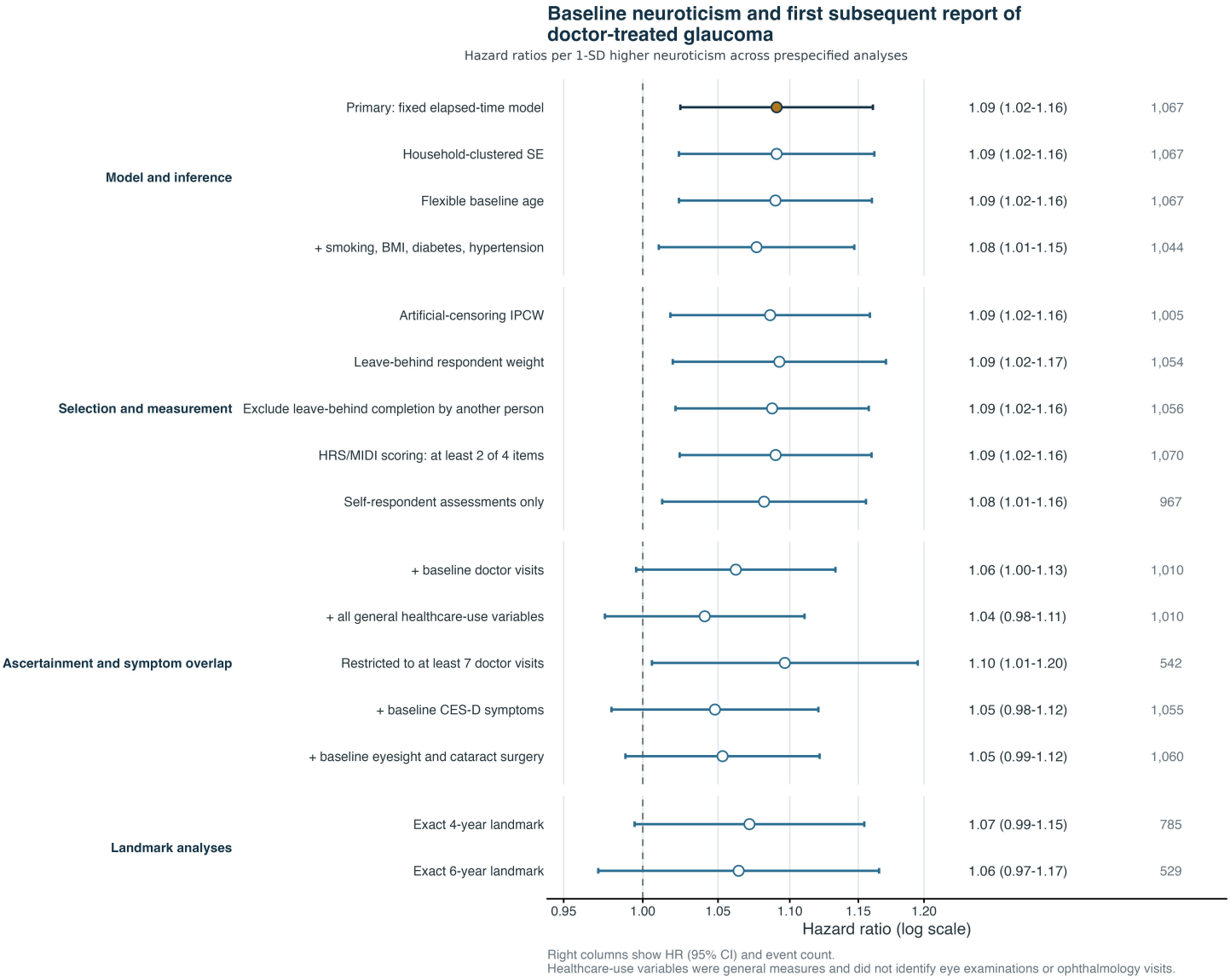


Figure 2

Primary and key sensitivity estimates

Hazard ratios and 95% confidence intervals per 1-SD higher baseline neuroticism. The forest plot includes the primary fixed elapsed-time analysis, respondent-only reconstruction, HRS two-of-four-item scoring, exposure-completion sensitivity, household clustering, flexible age, IPCW attrition sensitivity, leave-behind weighting, cardiometabolic adjustment, all-general-healthcare-use adjustment, baseline CES-D adjustment, baseline eye-health adjustment, and true 4- and 6-year landmarks. Models differ in sample and purpose; attenuation probes are not alternative primary estimates.