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Original Research

The consequences of self-reported vision change in later-life: evidence from the English Longitudinal Study of Ageing



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ABSTRACT

Objectives: Using longitudinal data, we investigate whether deterioration and improvement in self-reported vision among people aged 50 years and older in England experience subsequent changes in various aspects of economic, psychological and social well-being.

Study design: Longitudinal random effects modelling.

Methods: We used six waves of the biennial English Longitudinal Study of Ageing spanning 2002–2012. Self-reported vision change was classed as an increase or decrease in self-reported level of vision between each wave and effects on depression, satisfaction with life, quality of life, social engagement and equivalized income were examined. Models were adjusted for health, employment and wealth.

Results: All well-being outcomes worsened among respondents experiencing deterioration in self-reported vision, and declined most among individuals with the poorest self-reported vision at baseline and follow-up. Results were significant in fully adjusted models for those deteriorating from optimal to suboptimal vision levels. Improvement in self-reported vision was associated with significantly better satisfaction with life, quality of life and social engagement when the improvement was from suboptimal to optimal vision levels.

Conclusions: Preventing deterioration in vision is the best means of ensuring well-being is not negatively affected by changes to sight. In addition, ensuring vision problems are corrected where possible may lead to improvements in well-being.

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Introduction

Visual decline is a common phenomenon among older people,^{1,2} and rates of poorer vision increases with age^{3,4} as does the prevalence of eye conditions such as glaucoma,

cataracts and diabetic retinopathy.² Studies have also shown poorer vision to be associated with lower levels of various types of well-being, including physical functioning,^{5–8} self-reported health,^{5,9} mental health,^{5,10,11} an increased risk of mortality¹² and reduced social engagement.^{5,6,13} Although medical intervention, such as cataract surgery, can significantly improve or

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restore impaired vision,¹⁴ a large number of older individuals with deterioration in vision remain untreatable.¹⁵

Previous research has highlighted that socio-economic factors are likely to influence both deterioration in vision and uptake of measures to improve impaired vision or prevent sight loss. Both onset of vision impairment and deterioration in vision occur at greater magnitudes among older people in poorer social circumstances.^{16,17} This group are more likely to be deterred from using eye health services because of potential treatment costs, such as the need to purchase glasses.¹⁸

Understanding the associations between changes in vision and well-being outcomes in relation to social circumstances offers important policy implications. Current evidence focusses mainly on cross-sectional associations between vision impairment and socio-economic circumstances, without addressing either the impacts of changes in vision over time or potential effects on other areas of well-being.^{5,6} With an increasing proportion of the older population in the population, the economic and social costs of vision deterioration among older people is an important issue to address. This study uses longitudinal data to examine the impact on well-being of changes in the vision of people aged 50 years and older in England.

Methods

Sample

The study uses waves 1 to 6 of the English Longitudinal Study of Ageing (ELSA). ELSA is a nationally representative panel study of individuals aged 50 years and older living in households that had participated in the Health Survey for England in 1998, 1999 or 2001. Data are collected from participants every 2 years, with six waves currently available for analysis, spanning a 10-year period from 2002–2003 to 2012–2013. This study uses core members from wave 1 aged 50 years and older who respond to at least two consecutive waves of ELSA, so that a change in self-reported vision over a two-wave period can be measured. Where respondents have participated in all waves of the survey, five changes in self-reported vision are recorded (waves 1–2, 2–3, 3–4, 4–5 and 5–6). Respondents are included in the data at any point at which they have provided sufficient information. For example, a respondent with missing data at waves 3 and 4 will still have their two measured changes in self-reported vision recorded in the analysis (so in this instance those from waves 1–2 and 5–6). The final sample consists of 28,086 observations (from a potential maximum of 68,964 observations) of vision change from a sample of 8581 individuals (from a potential maximum of 11,391 individuals).

Measures

Outcome variables

The study examines the impact of self-reported vision change on five outcome measures: depression, satisfaction with life, quality of life, social engagement and equivalized income. Outcomes are measured at the wave at which a change in self-reported vision has been recorded. For

example, the impact of a change in vision between waves 1 and 2 is measured by well-being at wave 2. Depressive symptoms are measured using an eight-point version of the Center for Epidemiologic Studies Depression (CES-D) scale score.¹⁹ The score identifies potential indicators of depression (yes/no) in the week before interview, such as feeling depressed, lonely or sad, feeling that everything was an effort and restless sleep. The scale ranges from 8 (highest number of depressive symptoms) to 0 (no depressive symptoms).

Satisfaction with life is measured using the Satisfaction With Life Scale²⁰ and asks the respondent to rate aspects of life satisfaction, such as having achieved important goals and excellence of life conditions, from the response options ranging from 'strongly agree' to 'strongly disagree' on a seven point Likert scale. The scale ranges from 5 (poorest life satisfaction) to 35 (highest life satisfaction).

Quality of life is measured using the Control, Autonomy, Self-realisation, and Pleasure (CASP) scale.²¹ A psychometrically validated 15 factor scale is included, rather than the original 19 factor scale,²² and covers aspects such as feelings of control, pleasure, enjoyment, meaning, sociability, happiness, opportunity and satisfaction. When asked how often certain feelings or thoughts are experienced (e.g. 'I look back on my life with a sense of happiness'), the respondent is asked to rate their response to each question as either 'often,' 'sometimes,' 'not often' and 'never'. The scale ranges from 0 (poorest quality of life) to 45 (highest quality of life).

Social engagement is measured using a binary variable describing whether or not the respondent belongs to any organizations, clubs or societies, including political parties, environmental groups, neighbourhood watch groups, religious groups, charitable associations, educational groups or classes, social clubs and exercise classes or gyms.

Finally, equivalized weekly income is treated as a continuous variable and is comprised of an individual's total income from employment, pensions, benefits, assets and other sources, adjusted to account for household size. The mean equivalized weekly income pooled across waves 1 to 6 is £445.47.

Changes in self-reported vision

ELSA asks respondents to rate their eyesight, using glasses or corrective lenses as usual, within one of the following categories: *excellent, very good, good, fair or poor*. A sixth category of *registered blind* was added, where participants spontaneously provided this answer. The analysis here uses the original five-state variable. Those stating they were registered blind were combined with those stating poor self-reported vision because of low numbers (between 22 and 56 respondents over waves 1–6).

Change in self-reported vision here corresponds to an individual moving between two of the ordinal categories between consecutive waves. We reduce the range of potential changes to three conceptual changes in self-reported vision: changes within optimal vision (a two-category change from excellent to good and vice versa), changes within suboptimal vision (a one-category change from fair to poor and vice versa) and changes between optimal and suboptimal vision (a two-category change from very good to fair or from good to poor and vice versa). It should be noted that the term 'optimal vision' refers only to the fact that the respondent

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