Health economic consequences of interventions for undetected visual impairment in older adults

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Foreword

Ageing populations pose increasing demands on health and social care systems, and changes in sensory function are among the most influential factors shaping these needs. Many older adults experience gradual declines in vision that go unrecognised, despite their substantial impact on safety, independence, and overall well-being. Undetected difficulties of this kind often lead to higher use of both formal and informal care and contribute to preventable injuries—particularly falls—that impose considerable costs on individuals, families, and society.

Advances in screening methods and digital diagnostics now make it possible to identify vision-related problems earlier and more efficiently. Integrating such assessments into routine care for older adults offers an opportunity to reduce avoidable injuries, support safe ageing at home, and ensure that care resources are deployed where they generate the greatest value. For policymakers, understanding not only clinical outcomes but also the economic implications—including fall-related costs and caregiving needs—is essential for planning sustainable services in an ageing society.

The purpose of this report is to provide evidence to inform such decisions. Drawing on data from Sweden and Denmark, the report examines the feasibility, resource requirements, and potential societal impact of structured vision screening for individuals aged 75 and over. By linking screening outcomes to cost components such as informal care and injury-related healthcare use, the analysis offers a foundation for future evaluations of cost-effectiveness and for guiding policy discussions on preventive strategies for an ageing population.

This study is part of the project Undetected Visual Impairment project (“Oupptäckt synnedsättning – ett hot mot äldres hälsa, välbefinnande och relationer”) funded by Interreg EU. The responsibility for the analysis and conclusions in this report lies solely with the authors.

Lund, December 2025

Peter Lindgren
Managing director, IHE

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Summary

Visual impairment is a growing public health challenge in ageing populations, with substantial consequences for health, daily functioning, and societal resource use. Early identification of visual impairment is essential, as timely correction or treatment can prevent functional decline, reduce fall-related injuries, and potentially decrease both healthcare and informal care needs. Despite this, many older adults live with undetected vision problems, and routine vision assessments are not consistently implemented across care settings. Against this background, the Interreg Undetected Visual Impairment project sought to explore the value of systematic screening for older adults, reflecting a broader movement toward precision and preventive health interventions.

This report focuses on describing the impact of a visual impairment screening on the clinical outcome as well as the economic impact and quality-of-life consequences of implementing a vision screening for adults aged 75 and above in Sweden and Denmark. Participants were screened in three settings: primary care (Sweden), opticians (Sweden), and homecare services (Denmark). The screening included the use of visual acuity tests, contrast sensitivity assessments, fundus photography, and vision-related quality-of-life measures. A six-month follow-up was conducted, however only follow-up results from the Swedish cohorts were included in this report.

Findings showed a high prevalence of previously undetected visual impairment across all settings. Impairment was particularly common among individuals who had not undergone an eye examination in the past year, but also frequent among those who reported recent testing, thus underscoring the need for more systematic screening approaches. A large proportion of participants received recommendations for further clinical assessment, and about two-thirds of them acted on these recommendations. Most follow-up interventions involved minor corrective measures such as glasses, while a smaller number required more intensive treatments. Across the Danish homecare cohort, even individuals without self-reported vision difficulties frequently required clinical follow-up, indicating that symptoms alone are insufficient for identifying impairment.

The health economic component assessed both the direct costs of the intervention and the potential societal costs associated with visual impairment. The cost of screening was estimated at around 375 and 520 SEK per person, depending on setting and staff time. Fundus photography accounted for the largest share of the direct cost. Broader societal costs related to visual impairment—such as informal caregiving and fall-related injuries—were also examined. While only a small proportion of participants reported falls linked to vision problems, the associated costs were high (approximately 92,800 SEK per fall), illustrating the potential economic value of preventive strategies. Informal care needs were generally low but still generated non-negligible annual costs per participant highlighting the need for incorporating this cost for the analysis.

Health-related quality-of-life, expressed as utility values derived from the NEI VFQ-25, remained relatively stable over the six-month period while utilities decreased in some subgroups over time. No major improvements were observed following screening, partly due to the short follow-up interval and the absence of a control group. Utility values were generally high at baseline, and only modest differences were observed between groups receiving follow-up recommendations and those who did not. The study therefore cannot determine whether screening leads to measurable quality-of-life gains.

Although the present study does not allow for definitive conclusions regarding the cost-effectiveness of the screening intervention, it nevertheless generates several essential estimates of both costs and effects that constitute a valuable foundation for future economic evaluations. Therefore, to rigorously assess whether systematic vision screening yields meaningful health gains or represents an efficient use of healthcare resources, further research will be required. Such research should incorporate substantially longer follow-up periods to capture delayed clinical and functional outcomes, enrol larger and more representative populations to ensure statistical robustness, and include an appropriate control group.

1. Introduction

As of 2024, global life expectancy at birth has risen to 73.3 years—an increase of 8.4 years since 1995. The global population aged 60 and over is expected to grow from 1.1 billion in 2023 to 1.4 billion by 2030, with the most rapid increase occurring in developing regions. The World Health Organization (WHO) estimates that the share of the global population aged over 60 will rise from 12% in 2015 to 22% by 2050 (1). Therefore, with these demographic shift, important public health implications need to be taken into account for the older adults' cohorts. Ensuring older adults maintain good health is essential for supporting their independence and enabling active participation in family and community life (1).

A gradual deterioration of sensory functions is a key aspect of the ageing process, significantly influencing both the health and quality of life of older adults (2). Therefore, as populations continue to age, visual impairment is expected to become increasingly widespread. Vision-related conditions such as cataracts, uncorrected refractive errors, diabetic retinopathy, glaucoma, and age-related macular degeneration are likely to rise in prevalence. Impaired vision can significantly reduce quality of life by limiting daily activities and contributing to a higher risk of mental health issues, falls, and dependence on others (3-5). Given these challenges, there is an urgent need for healthcare and social support systems to adapt and respond to the demands of an ageing society.

Addressing visual impairment among older adults is not only a public health priority but also economically justified. A study by Zhang et al (6) highlights a substantial increase in the global prevalence and disease burden of age-related macular degeneration (AMD) which subsequently is related to low vision and blindness between 1990 and 2021. The rise of visual impairment is associated with an increase of disability-adjusted life years (DALYs). In addition, predictive models suggest that as the global population continues to age, the number of individuals affected by AMD-related vision loss will grow significantly. By 2050, more than 9 million people worldwide are expected to be impacted, with women disproportionately affected. These findings underscore the urgent need for strategic public health planning. These healthcare strategies can offer valuable data to inform resource allocation, guide the development of medical policies, and support targeted interventions aimed at mitigating the future impact of AMD-related visual impairment. In addition, a report by the international federation of ageing (IFA) emphasized that preventive care for vision loss has the potential to be cost-effective. Vision loss also contributes to higher overall healthcare costs. Patients with visual impairment incur an estimated $2,000 to $4,500 more in non-eye-related medical expenses annually compared to those without vision loss. The report therefore highlights the broader value of early intervention—not only in preserving vision but also in reducing healthcare and societal costs (7).

In Scandinavian countries, like other high-income countries, visual impairment represents a significant health concern among the older adults' population. This topic is quite relevant to address as in these countries the life expectancy exceeded the global life expectancy for both men and women(8). Visual impairment negatively impacts quality of life and daily functioning, with studies showing that the prevalence of visual difficulties is influenced by a range of demographic factors (9, 10). A recent analysis based on data from the Survey of Health, Ageing and Retirement in Europe (SHARE) has highlighted the prevalence of self-reported vision difficulties among older adults in Sweden. According to the findings, 12.7% of women aged 60 years and older reported experiencing challenges with their vision. In comparison, 8.5% of men in the same age group indicated similar difficulties (11).

Despite the growing recognition of the burden of visual impairment in ageing populations, current research remains limited in its evaluation of systematic approaches to early detection and management. While epidemiological studies have documented prevalence and risk factors, there is a lack of comprehensive evidence on the effectiveness, the cost-effectiveness and broader value of implementing vision screening programmes for older adults. In particular, few studies have applied health economic perspectives to assess whether such interventions provide good value for money and are feasible for large-scale implementation in health and social care systems (12). Health economic analyses are essential to guide decision-makers by comparing intervention costs with health outcomes, such as improved quality of life and reduced long-term care needs (13). Without this evidence, policymakers face uncertainty when allocating resources to preventive eye care.

As a result of the current lack of sufficient evidence, there is a need for well-designed studies to rigorously evaluate the potential benefits of visual ability and fundus photography screening in older adults. Such screening plays a critical role in identifying individuals with visual impairment and facilitating timely referral to appropriate eye care (14).

This report evaluates a screening program that invited older adults in Sweden and Denmark to undergo eye examinations across three settings—primary care (Sweden), opticians (Sweden), and homecare services (Denmark) —to identify previously undetected visual impairment. This multinational initiative, conducted within the Interreg Europe Undetected Visual Impairment project, also explored participants' vision-related quality of life and followed their subsequent healthcare use to assess broader health and economic implications. Therefore, the aim of this report is to assess the costs and outcomes associated with a screening program for detecting visual impairment among older adults in different settings.

1.1 Research questions

This report focused on the health economic package of the project Interreg Europe Undetected Visual Impairment project while aiming to answer the following research questions:

1) What is the prevalence of visual impairment among older adults in the three different settings?
2) What are the costs associated with implementing the screening to detect visual impairment in older adults and what are the potential costs related to visual impairment in this cohort?
3) What is the health-related quality of life of the people screened to detect visual impairment in terms of health utility, and how does the health utility change 6 months after screening?

2. Background

2.1 Health-related quality of life and visual impairment: a review of the literature

Health-related quality of life (HRQoL) tools are essential instruments for evaluating how a medical condition, such as visual impairment, affects an individual's daily functioning and overall well-being. These tools can be broadly categorized into generic and disease-specific measures, each serving distinct purposes and offering unique advantages and limitations within the public health research (15).

Generic HRQoL tools are designed to assess quality of life across a wide range of health conditions and populations. Instruments such as the SF-36 (Short Form-36), EQ-5D, and WHOQOL-BREF are commonly used in both clinical research and population health studies. These tools evaluate broad domains like physical functioning, mental health, pain, and social functioning. In the context of visual impairment, generic HRQoL tools provide a valuable overview of how visual deficits impact general health and well-being. However, they may lack sensitivity to detect subtle or specific functional limitations related to visual impairment, such as difficulty reading, driving, or recognizing faces (13, 15). A recent systematic review explored the relationship between visual impairment and HRQoL including 12 population-based studies from the US, Europe, Asia, and Australia. Despite using different generic HRQoL instruments (such as EQ-5D, SF-36, and WHOQoL), the tools consistently proved sensitive enough to detect the impact of vision loss, particularly in physical health domains like mobility, self-care, and daily activities. While effects on mental and social well-being were also reported, these varied somewhat across studies. In addition, the pattern of reduced HRQoL with worsening vision was remarkably consistent across countries and cultures, highlighting the global burden of visual impairment. In several studies, vision loss had a comparable or even greater impact on HRQoL than other major health conditions (16).

On the other hand, disease-specific HRQoL tools are tailored to assess the impact of a particular condition—in this case, visual impairment—on a person's life. Examples include the National Eye Institute Visual Function Questionnaire (NEI VFQ-25) (17) and the Impact of Vision Impairment (IVI) questionnaire (18). These tools focus on aspects of daily living that are directly influenced by visual function, such as near and distance vision activities, mobility, emotional well-being related to visual impairment, and visual symptoms. Because of their specificity, these tools are generally more sensitive to changes in vision and more effective at capturing patient-reported outcomes in ophthalmologic clinical trials and vision rehabilitation studies. Several studies in the literature showed that visual impairment is associated with a decrease of the QoL of patients including older adults' cohorts, primarily using the NEI VFQ-25 which shows high reliability and ability to detect change of QoL in different cohorts (19-23).

In summary, while generic HRQoL tools offer a broad perspective useful for comparing across conditions and populations, disease-specific instruments provide a more nuanced understanding of the unique challenges faced by individuals with visual impairment. Selecting the appropriate tool depends on the objectives of the assessment—whether for general population comparisons or in-depth evaluation of vision-related quality of life. For the purpose of this study, the disease-specific tool, NEI VFQ-25, was used and further details about the tool and its use in the analysis are provided at the methods sections of this report.

3. Method

3.1 Description of the screening program

The project Interreg Europe Undetected Visual Impairment project ("Oupptäckt synnedsättning – ett hot mot äldres hälsa, välbefinnande och relationer") is an Interreg-funded initiative designed to detect undiagnosed visual impairment among adults aged 75 and older and to explore its impact on daily life, health, and well-being. The screening combines standardized clinical vision assessments, retinal imaging, patient-reported outcomes, qualitative interviews, and health economic evaluation to provide a comprehensive understanding of age-related visual decline.

Across all three implementation settings—Swedish primary care (Vårdcentral), Swedish opticians (Synsam), and Danish home care—participants undergo a series of standardized assessments. These include tests of distance and near visual acuity, contrast sensitivity, and retinal photography. Retinal images are reviewed by ophthalmologists through a digital platform (Eye-Check Systems), allowing timely detection of eye conditions that may otherwise go unnoticed.

In Sweden, at the healthcare center, three tests were administered: distance and near visual acuity, as well as contrast sensitivity. The examinations were carried out by registered nurses, one of whom specialized in ophthalmic care. In parallel, participants were also recruited at optician stores during their initial vision assessments. Those who chose to participate in the study underwent a comprehensive eye examination similar to the one used at the healthcare center and included visual acuity testing, fundus imaging, and the completion of structured questionnaires. Further details about the screening and the specific assessments used are available in the study protocol published elsewhere in the literature (24).

In Denmark, case finding was conducted in participants' homes and consisted of distance and near visual acuity measurements, contrast sensitivity testing, fundus photography, and the completion of a questionnaire on self-reported vision-related quality of life. The home visits were carried out either by an experienced optometrist or by student nurses with prior experience from clinical placements and employment in home care services. Individuals identified with previously undetected vision loss were invited for further assessment at the hospital's ophthalmology department. In addition, measurements were performed by an authorized optometrist and a certified ophthalmic research nurse before the participant underwent a full clinical examination by an ophthalmologist.

3.2 Study participants and recruitment

In Sweden, study participants were recruited consecutively from two settings: a healthcare centre in Halmstad and a local optician store. Inclusion criteria included: age 75 years or older, sufficient cognitive function to participate meaningfully, and the ability to understand and communicate in Swedish. Recruitment took place in primary care during routine visits (e.g., when taking a blood sample). Additional details regarding the recruitment procedures and the screening are provided in a separate publication (24).

For the Danish cohort, individuals in homecare settings were included if they met all criteria: being 75 years or older, able to speak and understand Danish, cognitively capable, and had not undergone assessments by an optician or ophthalmologist within the last two years. During

screening, many potential participants were excluded because they were already known to have significant eye disease or reduced vision, had regular diabetic eye screening, or had undergone recent assessments by an optician or ophthalmologist. Others were excluded due to cognitive difficulties such as dementia or anxiety, or because they were affected by severe or terminal illness that made participation inappropriate.

3.3 Data collection

3.3.1 Health-related questions and compliance parameters

At recruitment into the study, participants were asked a series of questions regarding their vision status and experiences related to visual impairment. These included: the date of their most recent vision test, whether they had experienced any symptoms of visual impairment, whether they had taken action in response to such symptoms, and whether they had suffered any accidents or injuries attributable to impaired vision, along with the consequences of such events.

During the follow-up visits, participants were also asked about their compliance with the recommendations provided based on their initial screening results. This included questions about their attitudes toward the recommendations, the type of medical care or support they had sought, and whether they had experienced any new or recurrent accidents or injuries potentially linked to vision problems. Follow-up data was not available for the cohort in the homecare setting.

In addition, further details were obtained from a healthcare staff questionnaire, where nurses conducted and documented the outcomes of the eye examinations, including any clinical recommendations made. The questionnaire also captured relevant socioeconomic information about the participants, such as educational background and living conditions. In addition, nurses and opticians recorded the time needed to perform the tasks of the screening which was used for the cost estimation. The parts of the questionnaire with health economic questions are included in Supplement 1.

3.3.2 Costing parameters

The objective of this component is to estimate the total costs associated with the screening and with visual impairment, including both direct and indirect costs. This cost analysis will contribute to understanding the economic implications of the intervention from a societal perspective.

Direct Costs

a) **Consequence of screening**

Direct costs will include resources used as a consequence of screening or visual impairmentthat are directly attributable to the implementation of the screening, and will be assessed as follows:

- **Staff time**: The time healthcare personnel (nurses) dedicate to delivering the screening. This information was obtained through responses to the healthcare staff questionnaire (appendix), which included estimates of time spent on each relevant task or activity. Time for recruitment and education for staff was not included.

- **Medical testing and equipment**: Costs related to the diagnostic procedures, including medical tests, , and use of specialized equipment for vision screening, was included. Fixed cost for investing in machinery was not included.

- To estimate the costs associated with healthcare use, the average hourly income for opticians in Sweden, nurses in Sweden, and home care nurses in Denmark was obtained from appropriate references. For Sweden, incomes were adjusted to include employer social fees at a rate of 37.5 % (25)

- **Medical care cost:** Costs related to procedures and interventions performed as a consequence of the screening, i.e. what participants were recommended after screening (e.g., visit to optician or ophthalmologist). This was not estimated in this report as there was a lack of data on the procedures/interventions performed.

b) Consequence of visual impairment

- Health care due to fall injuries: this cost was calculated based on the prevalence of self-reported injuries and an average cost of injuries estimated from recent literature.

Indirect Costs

Indirect costs refer to the broader societal consequences of vision impairment, mainly informal care needed. We define informal caregiving time as the time contributed by unpaid caregivers—such as family members. The process involves identifying caregivers' time devoted to caregiving responsibilities and then assigning a monetary value to this lost time. The time devoted was assumed to be taken from leisure time to be conservative, which can be valued according to the net wage (the compensation at the marginal required for giving up leisure). National data on average monthly income was obtained from relevant sources from Denmark and Sweden.

3.3.3 Vision-related quality of life and utility scores

To evaluate vision-related quality of life (VRQoL), participants completed the NEI VFQ-25, a widely used, vision-specific instrument (17). The questionnaire was administered in its validated Swedish translation (26), originally adapted from the English version. The NEI VFQ-25 is designed to assess the impact of ocular conditions across multiple dimensions of health and daily life, including emotional well-being, social functioning, and overall quality of life, along with specific functional limitations caused by vision problems.

The instrument includes several vision-targeted subscales that measure: general vision, difficulties with near and distance activities, social and role limitations, dependency, mental health symptoms related to vision, and driving difficulties. Additional subscales assess peripheral vision, color vision, and ocular pain. A separate item captures the respondent’s general health status. Responses are scored on a scale from 0 to 100, with higher scores indicating better perceived VRQoL. Subscale scores are computed by averaging the responses within each domain, following the official NEI VFQ-25 scoring guidelines (27).

3.4 Data analysis

All variables collected from the surveys at different points in time, including demographic information, visual function scores, and quality of life measures, were descriptively analysed using STATA version 19. Summary statistics such as means, standard deviations, medians, and interquartile ranges were calculated for continuous variables, while frequencies and percentages were reported for categorical variables. Results were stratified by implementation setting to compare patterns across the Swedish primary care, optician, and Danish clinical settings. To better understand the change of HRQoL, paired samples t-tests were applied to assess within-participant changes in utility scores over time (baseline vs. follow-up); when the data was not normally distributed Wilcoxon Signed-Rank Test was used as the suitable non-parametric alternative. Details about the calculation of utilities are presented in the text below.

The VFQ-25 results within each of the 25 questions were analysed using STATA which also allowed the calculation of the final score. However, while the VFQ-25 is a widely used instrument for assessing the impact of vision impairment on daily functioning and vision-related quality of life (VRQoL), it does not produce a utility score in itself. Utility scores, which range from 0 (equivalent to death) to 1 (perfect health), are essential for cost-utility analyses in health economics. These measures allow for comparison across interventions and diseases, supporting healthcare decision-making and resource allocation. In this study, utility scores derived from the VFQ-25 was used to estimate the value of the screening within the Swedish healthcare context.

To convert VFQ-25 responses into utility values appropriate for economic evaluation, we conducted a literature review to identify the most robust and validated methods. Two approaches were identified as most suitable; however, we present the results based on the second approach:

1. Censored Least Absolute Deviations (CLAD) Model (28)

The CLAD model is a regression technique tailored for censored data—where outcome values are restricted within a certain range, such as utility scores (0–1). This method is particularly appropriate for modelling health-related quality of life (HRQoL) data, which often exhibit non-normal distributions and are bounded by nature. The CLAD model accounts for these statistical properties, providing a reliable means of mapping VFQ-25 scores to utility values.

2. Visual Function Questionnaire Utility Index (VFQ-UI) (29)

The VFQ-UI is a validated utility measure derived directly from six items within the VFQ-25 : questions 6,11,14,18,20 and 25. It was chosen as the preferred way to compute the utility within this study cohort. It is specifically designed to provide preference-based utility scores for vision-related conditions and has been shown to be suitable for use in health economic evaluations. The VFQ-UI in this study was calculated at both assessment points (baseline and 6 months), generating utility values on a 0–1 scale. This approach was deemed suitable for the analysis, and the calculations were conducted using the VFQ-UI algorithm in Excel, with subsequent verification using R in accordance with recommended procedures.

4 Result

4.1 Study population characteristics

The study population included 215 participants who underwent vision testing in three different settings: primary care (Sweden, n=109), optician stores (Sweden, n=28), and home care (Denmark, n=78). Across all groups, the majority were women, ranging from 63% in primary care to 70% in home care. The mean age was relatively similar in the Swedish settings (81.65 years in primary care and 81.35 years in optical stores), but slightly higher among home care participants in Denmark (84.35 years). Educational background varied notably across settings: while 45% of primary care participants had only elementary education, this proportion was even higher (72%) in the home care group, suggesting that lower educational attainment may be more common among those requiring home-based support. Differences were also observed in housing and living arrangements as highlighted in Table 1.

Table 1. Sociodemographic characteristics of patients at baseline in the different settings of the study

		Primary care (Sweden)	Optic store (Sweden)	Homecare (Denmark)
Total		109	28	78
Gender	Men	40 (37%)	10 (36%)	24 (30%)
	Women	69 (63%)	18 (64%)	54 (70%)
Age	Mean	81.65	81.35	84.35
Education level	Elementary school	51 (47%)	Missing data	56 (72%)
	High school	34 (31%)		5 (6%)
	Post-secondary	13 (12%)		12 (15%)
	University	11 (10%)		1 (2%)
	No answer			4 (5%)
Housing condition	Rental apartment	55 (59%)	9 (32%)	Missing data
	Owned apartment	13 (12%)	2 (7%)	
	House	40 (37%)	15 (54%)	
	No answer	1 (1%)	2 (7%)	

		Primary care (Sweden)	Optic store (Sweden)	Homecare (Denmark)
Household number	Living alone	55 (50%)	Missing data	55 (70%)
	Living with another person	54 (50%)		22 (28%)
	Living with 2 others			1 (2%)

To understand the general health of the included population, the first question of VFQ-25 about general health ("In general, would you say your overall health is") was analysed at baseline for the 3 cohorts. Results are shown in figure 1 below illustrating that the distribution of self-rated overall health differed across the three service groups. Most respondents in all groups rated their health as "Good," with Primary Care showing the highest proportion (52%), followed by Optician (44%) and Home Care (28%). Home Care participants had the largest proportion reporting poorer health ("Poor" or "Fair"), while Optician respondents more frequently rated their health as "Very good" (33%) compared with the other groups. Only small percentages in any group reported "Excellent" health.

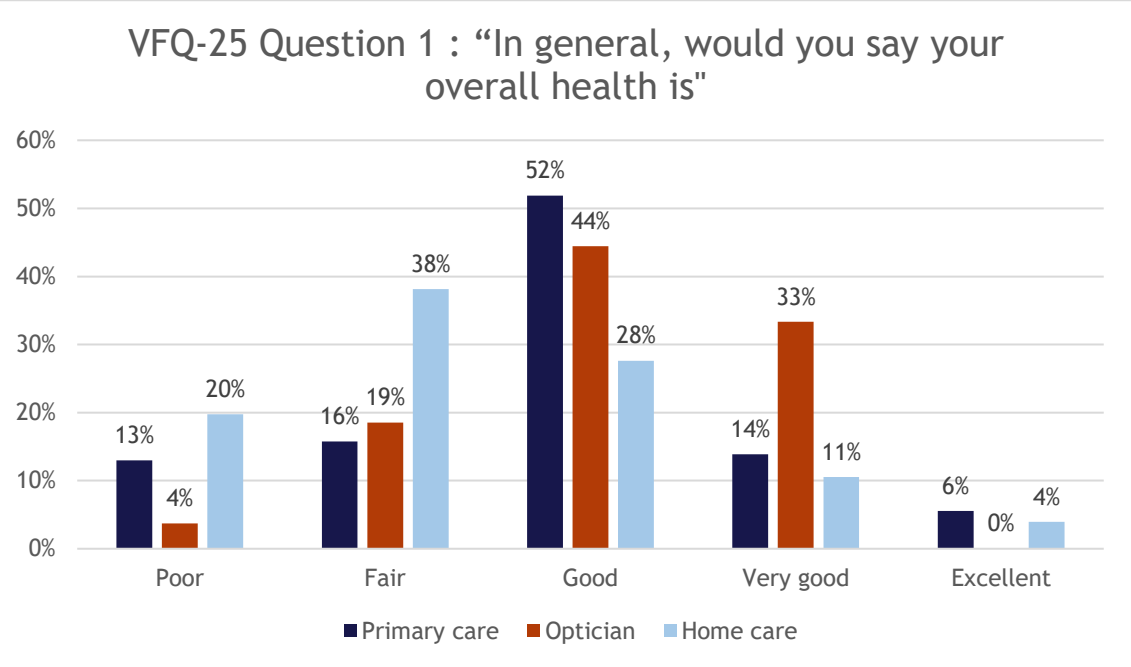


Figure 1. Responses to the General health question of VFQ-25 among the different cohorts of the study

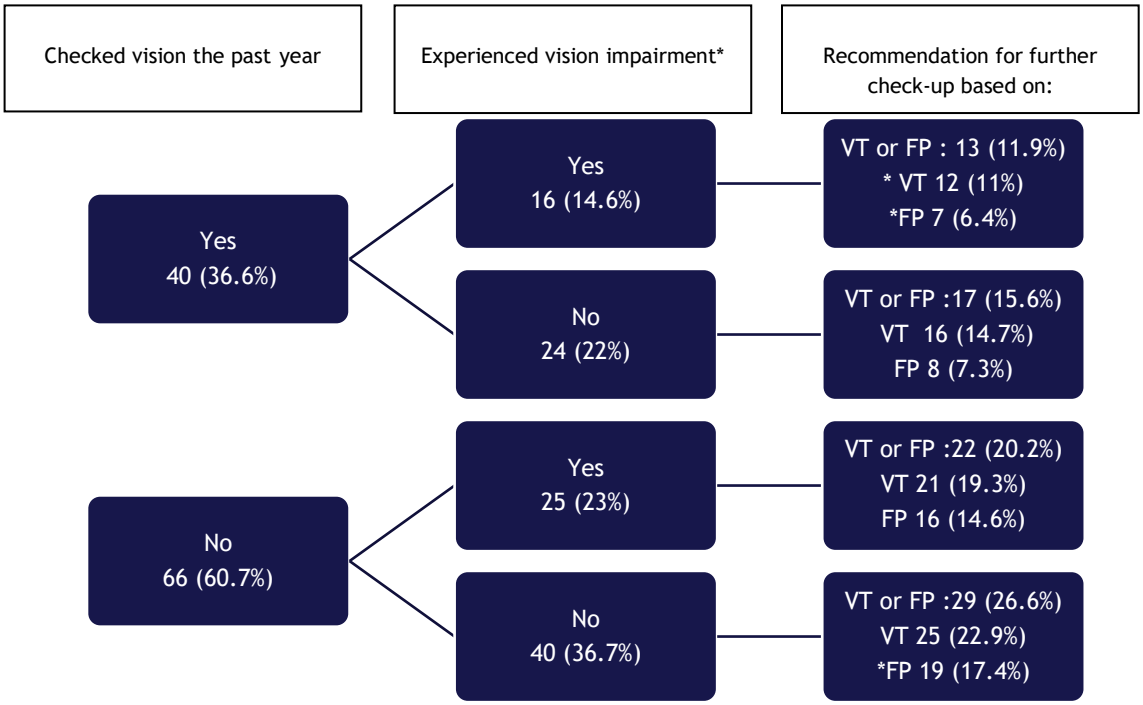
Follow-up data was collected from the cohort at the primary care and optician store settings in Sweden at six months after the baseline data collection, while follow-up data from the homecare setting was missing. The demographics of the 6-month follow-up cohort are quite similar to those of the baseline cohort as shown in Table 2. Follow-up data from the homecare setting was not available during the analysis for this report.

Table 2. Sociodemographic characteristics of patients at 6-months follow-up in primary care and optic store settings of the study

		Primary care (Sweden)	Optic store (Sweden)
Total		77	18
Gender	Men	27 (35%)	8 (44%)
	Women	50 (65%)	10 (66%)
Age	Mean	82	80
Education level	Elementary school	27 (35%)	Missing data
	High school	30 (39%)	
	Post-secondary	8 (10%)	
	University	11 (14%)	
	No answer	1 (2%)	
Housing condition	Rental apartment	30 (39%)	6 (33%)
	Owned apartment	16 (20%)	3 (17%)
	House	31 (41%)	6 (33%)
	No answer		3 (17%)
Household number	Living alone	43 (55%)	Missing data
	Living with another person	34 (45%)	

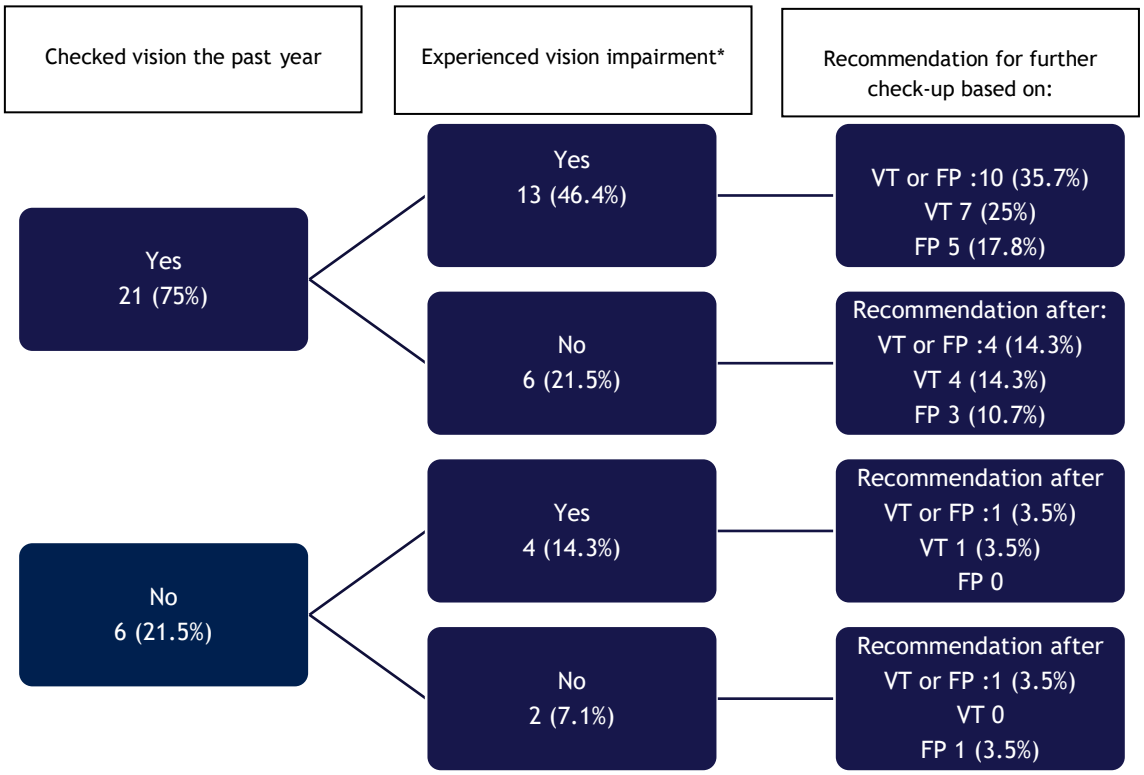
4.2 Prevalence of vision impairment

The prevalence of vision impairment varied across the three settings: primary care, optician, and homecare. The figures 2 (a,b,c) below present the data, segregating results based on the timing of the patients' most recent eye check-up and whether they experienced vision impairment. Vision impairment, as determined by vision tests or fundus photography, is reported in terms of both the number of cases and the corresponding percentages.



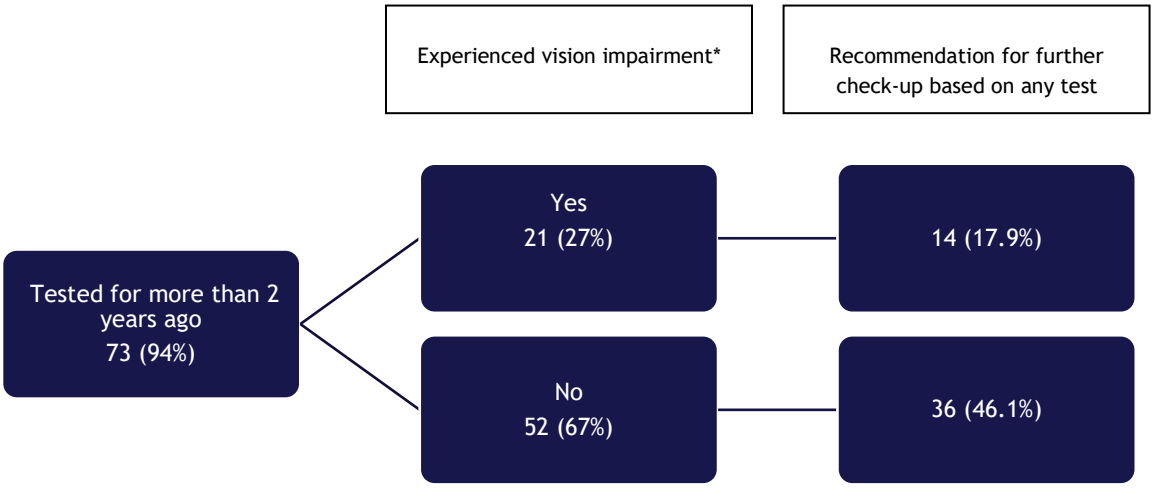
FP = Fundus photography; VT= Vision test
*Experienced vision impairment referred to question xx in the appendix asking patients if they have experienced vision impairment in the past year
3 (2.7%) people with missing data

Figure 2a. Visual impairment among older adults screened at the primary care in Sweden



FP = Fundus photography; VT= Vision test
*Experienced visual impairment referred to question xx in the appendix asking patients if they have experienced vision impairment in the past year
1 (3.5%) person with missing data

Figure 2b. Vision impairment among older adults screened at opticians in Sweden



FP = Fundus photography; VT= Vision test
*Experienced vision impairment referred to question xx in the appendix asking patients if they have experienced vision impairment in the past year
5 (6%) people with missing data

Figure 2c. Vision impairment among older adults screened at home care setting in Denmark

In the primary care setting (Figure 2a), visual impairment was more frequent among those who had not checked their vision in the past year compared to those who had. Specifically, 61% of participants whose last eye check-up was more than a year ago were found to have visual impairment, while the corresponding figure was 40% among those who had been tested within the past year. Recommendations for further testing were common across both groups, with more than 60% who were referred to further check-ups based on the vision tests and/or fundus photography, suggesting that even regular check-ups did not fully prevent undetected impairment.

At the optician setting (Figure 2b), the prevalence of visual impairment was higher overall compared to primary care. Among those who had checked their vision in the past year, 62% showed impairment, while 66% of those with a check-up more than a year ago were impaired. Interestingly, recommendations for follow-up testing varied: in the group with recent check-ups, a majority were advised to undergo further assessments, while among those checked more than a year ago, recommendations were less frequent, possibly reflecting the small sample size. These findings suggest that visual impairment is highly prevalent among individuals presenting at optician settings, regardless of the timing of their last eye examination.

In the Danish homecare setting (Figure 2c), 21 participants (29%) reported experiencing visual impairment, while the majority, 52 individuals (71%), did not report visual impairment in the past year. Interestingly, recommendations for further examination were issued at a similar rate for both groups: 66% among those with impairment and 69% among those without. This pattern indicates that follow-up was broadly recommended, not only in cases with confirmed vision problems, but also among those who did not initially report concerns about visual impairment. Such an approach may reflect the greater vulnerability of homecare patients, where comprehensive screening is essential to ensure early detection and management of potential vision-related conditions.

During the follow-up survey, participants' adherence with recommendations for further medical intervention or need for glasses was assessed. Out of the 95 participants at follow-up (primary care and opticians), 28 reported that they had been recommended an intervention, and 20 of them followed these recommendations and sought care.

Among those who followed the recommendations, various measures were taken to improve vision or manage eye health. Minor interventions, such as receiving new glasses, or adjustments to existing prescriptions, were the most common and applied to 7 participants. Additionally, 3 participants were treated with eye drops aimed at reducing intraocular pressure, while 4 participants underwent more extensive or long-term treatments requiring multiple hospital visits, such as injection-based eye therapies. No participants received one-time surgical treatments, such as cataract surgery, and 7 participants reported that no measures were taken.

These findings suggest that while most of those advised to seek care did follow this advice, the types of measures implemented varied considerably, ranging from minor corrective adjustments to more complex medical treatments.

4.3 Cost of screening

The cost of the screening was calculated in terms of the direct costs related to the time spent by healthcare professionals conducting the tests, as well as the cost of running and analyzing the fundus photographs. Table 3 summarizes the time reported by healthcare professionals as necessary to perform the vision test and fundus photography, including preparation time and

tasks performed after the visit. The total reported testing time was lowest among opticians, with an average of 11.5 minutes required. In primary care, nurses reported an average of 31 minutes for comparable tasks, while in the home care setting the required time was reported as 18 minutes. In addition, the average income per hour and the corresponding screening costs are reported in Table 3.

The cost of fundus photography was set at 275 SEK (30). The same price was applied for analysis in Denmark.

Table 3. Total time spent in healthcare on testing and its associated costs

	Test time (min)	Preparation time (min)	Post-visit time (min)	Total time for testing (min)	Income per hour (SEK/ hour)	Vision test total cost (SEK)
Optic store (Sweden)	6	0	5.5	11.5	485*	93 SEK
Primary care (Sweden)	20	4	7	31	470**	245 SEK
Home care (Denmark)	6	6	6	18	400***	120 SEK

* source: https://statsskuld.se/en/lonestatistik/glasogonoptiker
** source: https://www.scb.se/en/finding-statistics/sverige-i-siffror/salary-search/Search/?lon=nurse
*** source: https://www.salaryexpert.com/salary/job/home-care-registered-nurse/denmark

4.4 Cost related to visual impairment

4.4.1 Cost of informal care

The results indicate that the vast majority of patients across all care settings report not needing substantial help due to their eyesight as presented in Figure 3. Specifically, 96% of home care patients, 92% of primary care patients, and 75% of optician patients answered “definitely false” to the statement *“I need a lot of help from others because of my eyesight.”* This suggests that most patients, particularly those in home and primary care, are largely independent in managing daily tasks related to vision.

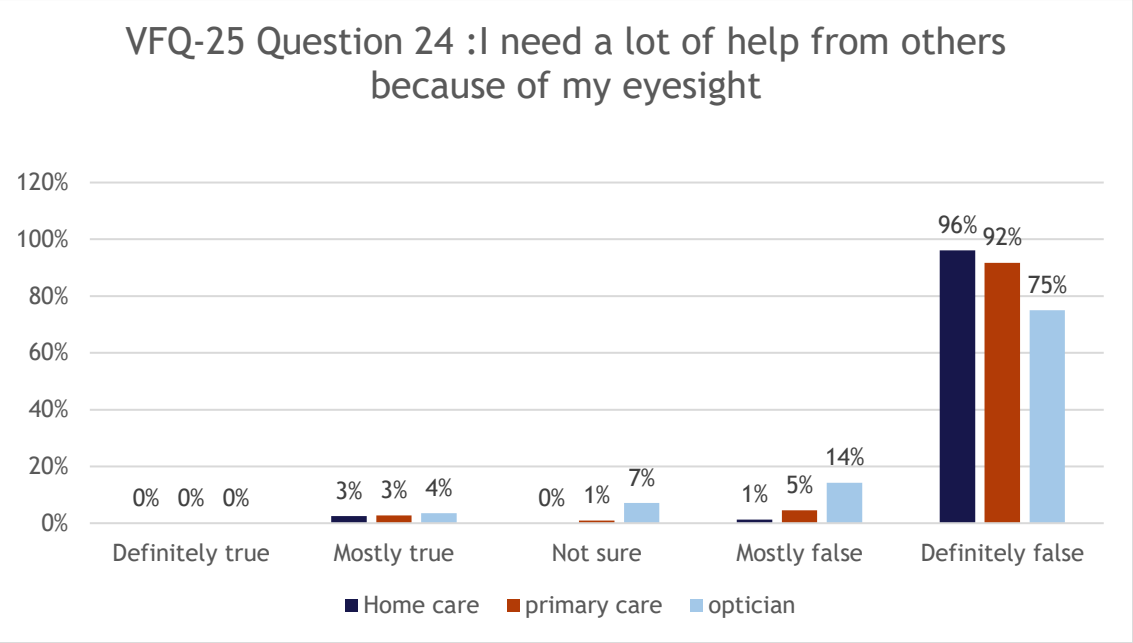


Figure 3. Responses to question 24 of VFQ-25 corresponding to the help from others due to eyesight

However, a small proportion of patients may require informal care. For home care, 4% of patients gave responses other than "definitely false" (3% mostly true, 1% mostly false), implying some need for assistance. Primary care shows slightly higher proportions, with 8% of patients potentially needing help (3% mostly true, 1% not sure, 5% mostly false). The optician group has the highest proportion of patients who might require informal support, with 25% indicating some level of need (4% mostly true, 7% not sure, 14% mostly false).

The informal care, usually provided by family members, friends, or neighbors to individuals with visual impairment, can have significant indirect effects on societal productivity (31). When a person requires assistance with daily activities due to poor eyesight, the caregiver may reduce the time they can devote to leisure, paid work, education, or other productive activities.

Due to lack of evidence from a Scandinavian setting, a Canadian study (31) was used to roughly estimate the societal costs associated with informal care for older adults in this project. The study observed that older adults with visual impairment receive more informal care compared to their peers without visual problems. The difference amounts to approximately 2.1 additional hours of care per week, 109 hours a year (31). When valuing this time using Swedish net wage levels—estimated at 134 SEK per hour according to a previous IHE report (32)—the additional cost is about 281 SEK per week. On a yearly basis, this translates into an informal care cost of roughly 14,642 SEK per person. For Denmark, an estimate rate of 334 SEK per hour was used in the analysis (33). Table 4 presents the social costs for the 3 settings.

Table 4. Average annual societal costs due to informal care among older adults' cohort

	Prevalence (%)	Number of hours	Hourly income (SEK)	Total cost for informal care (SEK)
Primary care	0.08	109	134	1168
Optician	0.25		134	3651
Home care	0.04		216	942

4.4.2 Cost of falls and injuries

Falls among older adults with visual impairment represent both a clinical and economic concern. Even though the prevalence may appear low, the associated costs can be substantial due to hospitalization and medical care.

Results from our study shows the following:

In Sweden: Out of 95 participants at follow-up, 3 (3%) reported accidents related to visual impairment. All three were falls, with 2 requiring hospitalization and 1 not needing further medical care.

In Denmark: Out of 78 participants, 3 (4%) reported falls due to vision impairment. Among these, 1 required hospitalization, while the other 2 were residing in nursing homes and did not require acute medical intervention.

Although the prevalence of falls in these groups was low—approximately 3.2% in Sweden and 3.8% in Denmark—it is important to consider the potential economic impact.

In the literature, we identified a recent study from Sweden that estimated the costs associated with falls. The study reported that serious injuries, including those requiring hospitalization, were associated with an average cost of 121,100 SEK(34). When inpatient care was excluded, the cost decreased to 64,500 SEK. For the purposes of this analysis, we averaged these two figures and assumed an average total cost of 92,800 SEK per fall. This estimate accounts for inpatient and outpatient care, pharmaceuticals, informal care, and other specialized services that may be required.

When the total cost of falls is distributed across the entire study population, the average fall-related cost per participant is approximately 2,930 SEK in Sweden and 3,525 SEK in Denmark.

Although the prevalence of falls in these groups is relatively low—around 3.2% in Sweden and 3.8% in Denmark—these per-person costs illustrate the economic impact of falls. Including these costs is important when evaluating interventions aimed at preventing falls among visual impaired older adults, as even a small reduction in fall incidence could lead to meaningful healthcare savings.

4.5 Health-related quality-of-life

Table 5 presents the health-related quality-of-life (HRQoL) calculated through the VFQ-25 and expressed as average utility values (expressed on a scale from 0=death to 1=full health). The values are segregated among older adults attending primary care or opticians. Participants are grouped according to whether they received no recommendation for follow-up, a recommendation through vision testing, a recommendation through fundus photography, or any form of recommendation. The number of patients within each category (*n*) is provided.

Within primary care, average utility values were similar across groups, ranging from 0.919 among those who were recommended further actions through fundus photography (*n*=52) to 0.929 among those with no recommendation (*n*=24). In the optician setting, utility values showed more spread but were contrary to expectations, with 0.822 among those with no recommendation (*n*=10), 0.891 among those advised further actions through vision testing (*n*=15) or fundus photography (*n*=11), and 0.907 among those given any recommendation (*n*=18).

Among participants with homecare in Denmark, the HRQoL at baseline was on average 0.93. The utility score was observed to be slightly lower among the group that was recommended a follow-up through the screening (average of 0.924) compared to the group that was not recommended further follow-up (average of 0.945).

Table 5. Utility scores at baseline for all cohorts segregated by type of follow-up recommendation

		No recommendation	Vision test recommendation	Fundus photo recommendation	Any recommendation	Total cohort
Primary care	N	n=24	n=77	n=52	n=85	n= 109
	Average utility	0.929	0.926	0.919	0.926	0.926
Optician store	N	n=10	n=15	n=11	n=18	n=28
	Average utility	0.822	0.891	0.891	0.907	0.895
Home care	N	n=28			n=50	n=78
	Average utility	0.945			0.924	0.930

At the 6 months follow-up, HRQoL was collected for 95 patients (primary care and opticians only) while data was not collected for the rest of the cohort in Sweden due to drop-out. Table 6 presents the results segregated by testing setting and recommendations. Among participants recruited in primary care, those receiving no recommendation had baseline utility of 0.929 (*n*=19) compared with 0.899 at follow-up which was not statistically significant according to the results of Wilcoxon Signed-Rank Test. Among those advised to do a vision test, a statistically significant change was observed with values decreasing from 0.924 at baseline to 0.886 at follow-up (*n*=52). Similarly, in the fundus photography group, utility decreased slightly from

0.924 to 0.872 (*n*=37) with statistical significance. When considering all participants with follow-up data in primary care (*n*=77), average utility was 0.926 at baseline and 0.890 at follow-up.

In the optician setting, follow-up data were only available for those advised a vision test (*n*=18). Their baseline utility of 0.896 decreased to 0.826 at follow-up. However, this change was not statistically significant according to the paired t-test.

Taken together, the results suggest that health-related quality of life among participants did not change substantially between baseline and follow-up. While some small decreases in average utility were observed across groups, values remained relatively stable, indicating that recommendations following eye health assessments were not associated with major shifts in overall quality of life during the follow-up period.

Table 6. Utility scores at follow-up for cohorts segregated by type of follow-up recommendation

	Sample size	Average utility at baseline	Average utility at follow-up	P-value
Primary care				
No recommendation group	19	0.929	0.899	p= 0.4926
Vision test recommendation	52	0.924	0.886	p=0.0099*
Fundus photo recommendation	37	0.924	0.872	p=0.001*
Any recommendation	58	0.924	0.887	p=0.0091*
All cohort	77	0.926	0.89	p=0.05
Optician				
Vision test recommendation	18	0.896	0.888	p=0.761

*statistically significant difference as p< 0.05

5 Considerations for cost effectiveness

A comprehensive health economic evaluation of vision screening programs requires consideration of both the incremental costs and benefits of the screening in order to determine the cost-effectiveness of the intervention presented in this report. However, this study does not aim to present any cost-effectiveness analysis, neither is it possible to estimate incremental changes due to the lack of a control group to compare to. However, some findings in this study can be used to reason around the possible incremental costs and benefits and could be used as a reference for future work.

The estimated cost of staff time required to perform the screening ranged between 100 and 245 SEK per participant, depending on the setting and personnel involved. In addition, the fundus photography, a key component of the screening, was conservatively estimated to cost 275 SEK per participant, however we acknowledge that this estimate can be underrepresenting the actual cost of the test. Thus, the total direct screening cost can be approximated at 375 to 520 SEK per screened individual. In reality when accounting for all healthcare costs, we expect the cost to be higher than the presented value, for example a recent study in the Netherlands estimated the cost of similar screening intervention that was AI-empowered to be around 160 euros (35), which is higher than the value we estimate in this report. A reason could be that this study did not estimate the cost of recruitment or the full time devoted by physicians to evaluate the fundus photo. These costs represent the initial investment needed to identify individuals at risk of visual impairment and to facilitate timely referral and management. In addition, there is an incremental cost for the interventions recommended and performed, which would not have been performed otherwise. In this study, it was found that most participants performed minor procedures, but four individuals started more intense treatment as a consequence of the screening. However, when considering the total of the screening, it is important to account for the costs of these procedures as it is considered a part of the healthcare pathway related to the screening.

When evaluating the economic impact of vision screening, several cost components should be considered to capture the broader implications for both the healthcare system and society. These include the costs of informal care, fall-related injuries, and potential gains in HRQoL.

1) Informal care costs
Informal care constitutes a substantial component of the overall economic burden of visual impairment. Evidence suggests that individuals with visual impairment require approximately 109 hours of informal care annually, corresponding to an estimated 14,606 SEK per person in Sweden and 23,544 SEK per person in Denmark. When these values are adjusted to the needs of the current study cohorts, informal care accounted for an average between 942 and 3,651 SEK per participant per year. These findings underscore the importance of considering the contribution of informal caregiving when assessing the full societal cost of vision impairment.

2) Costs Related to Falls and Injuries
Falls and fall-related injuries represent another major cost driver among older adults with visual impairment. Based on recent Swedish data, the average cost per fall case is estimated at 92,800 SEK. When adjusted for the prevalence of falls observed in this study, the average per-participant cost was approximately 2,930 SEK in Sweden and 3,525 SEK in Denmark. Although the incidence of falls in this cohort was relatively low, these costs highlight the potential economic benefits that could be realized through preventive interventions.

3) Potential Cost Savings

If vision screening programs were found to eliminate the need for informal care and the incidence of fall-related injuries, the incremental potential cost savings could range between 4,000 and 7,000 SEK per person screened. However, the present study did not demonstrate a measurable impact of screening on these parameters. As such, these estimates should be interpreted as exploratory and serve primarily to illustrate the possible magnitude of cost savings associated with effective screening interventions.

4) Health-Related Quality of Life (HRQoL)

HRQoL is a central outcome in economic evaluations, often forming the basis for cost-utility analyses through the estimation of quality-adjusted life years (QALYs). Understanding how vision screening influences HRQoL is therefore essential for future research. Although no improvement in HRQoL was detected in the current study, the six-month follow-up period may have been insufficient to capture meaningful changes in well-being or functional ability. Furthermore, the absence of a control group limits the ability to attribute observed outcomes to the screening. Future studies incorporating longer follow-up periods and appropriate comparison groups would allow for a more comprehensive assessment of the cost-utility of vision screening and provide the necessary parameters for formal economic modeling.

6 Discussion

The present study aimed to assess the prevalence of undetected visual impairment among older adults across three care settings in Sweden and Denmark, as well as to estimate the associated costs, quality-of-life outcomes, and economic implications of implementing systematic vision screening. By integrating clinical, quality-of-life, and cost data, this report contributes new evidence to an underexplored area within health economics: the societal value of early detection of vision impairment among ageing populations.

The findings indicate that visual impairment is prevalent among older adults, particularly among individuals who have not undergone vision tests in the past year. In primary care, 61% of participants who had not recently checked their vision showed impairment, compared with 40% among those tested within the past year. This supports the notion that regular vision assessments can facilitate earlier identification and management of eye conditions before they progress to severe impairment. The high prevalence of impairment among those visiting optician stores—regardless of recent testing—suggests that this group may already represent individuals with self-perceived vision problems seeking corrective care. Meanwhile, in homecare settings, even those without self-reported vision difficulties often required recommendations for further testing, highlighting that self-assessment is not always reliable and that structured screening may detect previously unrecognized conditions. Qualitative data in this project also highlighted the link between vision impairment and potential loss of driving license which is a concern for the population in the study.

Taking together, these results suggest that different care settings play complementary roles. Primary care screening can capture a broader segment of the population, including those not actively seeking eye care—whereas optician-based screening primarily reaches individuals already motivated by vision problems.

Behavioral and Compliance Considerations

The behavioral aspect of screening interventions is central to understanding their effectiveness and economic implications. Individuals have to agree on being screened and show up to the screening. Although no data was available for those declining participation, some observations suggest that individuals with less need for screening (i.e., individuals who would have checked their eyes anyway) were more inclined to accept. The data show that while a substantial proportion of participants were advised to seek further care following screening, not all followed through. Among those who received recommendations, approximately two-thirds pursued additional examinations or treatment. This compliance rate is encouraging but also suggests barriers—such as accessibility, affordability, awareness, or perceived need—remain. However, with our data we cannot predict what could happen in the absence of the screening-participants may or may not have sought vision care until their visual impairment became more severe, potentially leading to higher future costs related to falls, dependence, or hospital care.

From an economic standpoint, characteristics of individuals reached by the screening and compliance with recommendations are crucial for realizing the downstream benefits of screening. Non-compliance diminishes the potential cost savings from prevented complications. Therefore, strategies that ensure that those most in need are reached by the screening, enhance follow-up adherences such as improved referral systems, patient education, or integration with existing elderly care services—could substantially increase the cost-effectiveness of vision screening programs.

Economic Implications

The direct costs of implementing the screening intervention ranged from approximately 375 to 520 SEK per participant, depending on the setting and type of staff involved.

The economic burden associated with visual impairment extends well beyond direct healthcare expenditures, encompassing substantial societal costs related to informal caregiving, and injury-related expenses. While individual-level costs for caregiving and fall-related injuries may appear modest, their aggregate impact at the population level represents a significant economic concern. In the present study, no measurable effects of the screening intervention were observed on either informal care requirements or injury-related costs. Nonetheless, it is plausible that such effects could become evident in alternative settings or larger populations, where differences in health service structures, social support systems, or population characteristics may influence outcomes. The absence of demonstrable reductions in these broader cost domains in the current analysis limits the immediate cost-effectiveness potential of the screening program.

Furthermore, the current study cannot make any definitive conclusions regarding the cost-effectiveness of the screening. However, given the high societal costs associated with vision-related functional decline, even modest improvements in preventing dependency or falling incidence could yield meaningful economic benefits.

Health-Related Quality of Life and Cost-Utility Considerations

While the current study did not detect significant changes in HRQoL over the six-month follow-up, the utility values observed (0.89–0.93) suggest that the screened population maintained relatively high levels of perceived vision-related health. However, their general health was low and vision health may not be the concern of priority for those with other comorbidities. The absence of measurable improvement may reflect both the short observation period and the relatively healthy vision status of participants. In the qualitative part of the overall project, it was found that individuals' awareness of the impact of their visual impairment improved after screening. This may have caused some individuals to connect more problems to their visual impairment at follow-up which could potentially explain the decrease in the utility over the short period of time.

Strengths and limitations

The study provides a unique cross-country, multiple settings assessment of undetected visual impairment using real-world data and incorporates both cost and quality-of-life dimensions. However, several methodological inconsistencies between screenings conducted at primary care and those at opticians may introduce bias and limit comparability. Near visual acuity was measured using different instruments: opticians used single-letter charts, whereas primary care employed continuous text reading, a more demanding task that may lead to measurement bias. Contrast sensitivity, included only in the primary care protocol, introduces detection bias by enabling earlier identification of visual impairment in one setting but not the other. Questionnaire administration also differed, as opticians used self-administered paper forms while healthcare centres used computer-based surveys that often-required staff assistance due to limited digital literacy among participants, increasing the risk of interviewer bias. It is important to highlight that the inclusion criteria in Denmark differed from the criteria to recruit older adults in Sweden, as in Denmark participants did not check their vision in the last 2 years, a longer period of time compared to the Swedish cohort who could have potentially checked their vision within a one year frame before the data collection, this could introduce bias when comparing the cohorts.

7 Concluding remarks

While the present findings are exploratory, they underscore the importance of integrating economic perspectives into the evaluation of vision screening programs. Future studies should include a control group, longer follow-up periods, and more detailed cost data to enable robust cost-effectiveness and cost-utility analyses. Incorporating both healthcare and societal perspectives will be critical for informing policy decisions and for determining whether systematic vision screening among older adults represents a cost-effective strategy to reduce the burden of visual impairment and its associated complications.

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Appendix

Questionnaires used in the study (In Swedish)

Questionnaire for healthcare professionals that was filled on the first visit

1. **Datum för besöket _____(ÅR-MÅNAD-DAG)**

2. **Hur länge varade besöket totalt**

   Total besökstid: ____min

   Ungefärlig andel relaterad till ögontest: ____min

3. **Har du lagt ner någon extra tid på att förbereda dig inför besöket på grund av syntestet?**

   Ja

   Om ja, ungefär hur länge? ____min

   Nej

4. **Har du lagt ner någon extra tid på att förbereda dig efter besöket på grund av syntestet (skriva anteckningar i journalen, boka nya besök etc.)?**

   Ja

   Om ja, ungefär hur länge? ____min

   Nej

5. **Indikerade syntestet ett behov av en åtgärd för att förbättra ögonhälsan?**

   Ja

   Nej

   Om ja, vilken typ av åtgärd?.....

6. **Indikerade resultatet av ögonbottenfotot ett behov av en åtgärd för att förbättra ögonhälsan?**

   Ja

   Nej

   Om ja, vilken typ av åtgärd?.....

7. Deltagarens ålder _____år

8. Kön

Man.....	1
Kvinna.....	2
Vill inte uppge....	3

9. Antal personer i hushållet inklusive deltagare.____

10. Utbildningsnivå för deltagare

Grundskola	1
Gymnasium.....	2
Eftergymnasial utbildning.....	3
Högskola eller universitet.....	4

11. Boende

Hyreslägenhet.....	1
Bostadsrätt.....	2
Villa.....	3

Questionnaire for participants that was filled on the first visit

1. Datum

2. När kollade du din syn senast?

För minder än ett år 1

För mer än ett år 2

Aldrig 3

3.a Har du upplevt synnedsättning under det senaste året?

Ja..... 1

Nej..... 2

OM JA

3.a Vidtog du någon åtgärd (det går att ringa in fler än ett)?

Kontaktat hemtjänstpersonalen..... 1

Kontakta distriktssköterska..... 2

Besökte en optiker..... 3

Besökte en ögonläkare 4

Besökt allmänläkare..... 5

Övrig..... 6

4.a Har din synnedsättning resulterat i någon incident eller olycka under det senaste året?

Ja..... 1

Nej..... 2

OM JA

3.b Vilken typ av incident/olycka (det går att ringa in fler än ett)?

Fallolycka?..... 1

Trafikolycka?..... 2

Fel medicinering?..... 3

Annan..... 4

I så fall vilken/vilka .....

3.c Fick du någon extra vård på grund av tillbudet/olyckan (det går att ringa in fler än ett)?

Ja, sjukhusvård.....	1
Ja, primärvård/vårdcentral.....	2
Ja, distriktssköterska.....	3
Ja, hemtjänst.....	4
Ingen ytterligare vård behövdes...	5

Questionnaire for participants that was filled on follow-up

1. Datum för uppföljningsbesöket _____(ÅR-MÅNAD-DAG)

2.a Fick du några rekommendationer eller en remiss som ett resultat av syntestet (exempelvis uppsöka optiker)?

Ja	1
Nej.....	2

OM JA

2.b Gjorde du det som föreslogs?

Ja	1
Nej.....	2
Några, men inte alla	3

Om nej, vilka gjorde du inte?.....

3.a Vilka åtgärder vidtogs efter ögontestet för att förbättra din syn?

Mindre åtgärd (glasögon eller kontaktlinser eller mindre justeringar av nuvarande glasögon/kontaktlinsar)	1
Engångs-behandling såsom exempelvis kataraktoperation (cateract).....	2
Större ingrepp eller längre behandlingar som kräver flera besök på sjukhuset (tex injektionsbehandling i öga/-on)	3
Inga ingrepp/åtgärder har vidtagits	4

4.a Har din synnedsättning resulterat i någon incident eller olycka under det senaste året?

Ja..... 1

Nej..... 2

OM JA

4.b Vilken typ av incident/olycka (det går att ringa in fler än ett)?

Fallolycka..... 1

Trafikolycka..... 2

Fel medicinering... 3

Annan..... 4

I så fall vilken/vilka.....

4.c **Fick du någon extra vård på grund av tillbudet/olyckan (det går att ringa in fler än ett)?**

Ja, sjukhusvård..... 1

Ja, primärvård/vårdcentral..... 2

Ja, distriktssköterska..... 3

Ja, hemtjänst..... 4

Ingen ytterligare vård behövdes...

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