

Visual functioning in nursing home residents: information in client records

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Aim and objectives. To improve (eye)care in nursing homes by reporting and assessing visual functioning to enhance professional caregivers' awareness of visual problems.

Background. Older adults experience visual problems owing to biological ageing or eye disease. In the Netherlands, the prevalence of visual impairments is the highest in the subgroup of nursing home residents (41.3%). These impairments influence quality of life in terms of limiting daily activities and participation in social activities. Furthermore, 63% of visual problems are defined as 'avoidable blindness'. For this reason, screening of visual functioning in the nursing home is of major importance. Moreover, visual functioning should also be taken into account to prevent the incidence of falls.

Design. A field study on recorded information of visual functioning and visual assessment in nursing homes.

Methods. Assessment of visual functioning of 259 residents in nursing homes. Subsequently, recorded information in client files is related to the assessment outcome.

Results. Only in 101 (39%) of the 259 client records was some information on visual functioning found in client files. Whether a prescription for new glasses was dispensed made no difference in reporting on visual functioning in the client record. In more than half of the cases assessed as 'low vision or blindness', no information about visual functioning was found. Furthermore, no information was found in 31% (80/259) cases of suspected visual problems (referrals). A significant proportion of client records ($p < 0.05$) showed no recorded information in cases of referral for further check-up.

Conclusions. In this study, one-third of nursing homes residents have visual problems, needing examination by an ophthalmologist. Problems with visual functioning should be assessed and captured in client records. Awareness of residents' visual functioning is a prerequisite for adapting basic daily care to the residents' needs.

Key words: daily care, health care records, low vision, older adults, optometric assessment, senior lodgements

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Introduction

In the Netherlands, the highest prevalence (41.3%) of visual impairment is found in the subgroup of residents of nursing homes and care institutions (Limburg & Keunen 2009). These impairments limit the daily activities and participation in social activities for older adults. These limitations are

described in the model of the international classification of functioning, disability, and health (ICF) (Fig. 1). This model provides an overview of various aspects of health conditions in terms of the influencing activities of biological, personal, environmental and social factors (WHO 2002).

A health condition can describe such eye diseases as cataracts, glaucoma, macular degeneration or diabetic

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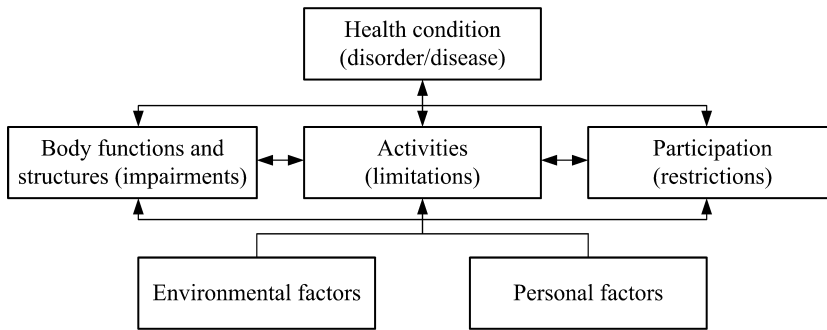


Figure 1 The international classification of functioning, disability and health (ICF) (WHO 2002).

retinopathy. Eye diseases will result in the deterioration of visual functioning, referred to as ‘body function and structures’ in the ICF model. Within the ICF, the role of care professionals is seen as an environmental factor. In the case of visual problems, care professionals can influence the clients’ environment and adapt personal care, just as technical staff can adapt a building’s environment and systems. All this will enhance the activity and participation of those residents with low vision or blindness.

There are three main reasons why care professionals in nursing homes should be aware of residents suffering from various kinds of visual impairments (Brabyn *et al.* 2001) and report these problems in client records. First of all, these insights are required to deliver adequate quality of everyday care to the individual resident. Visual comfort and visual functioning must be taken into account when considering activities of daily living, quality of life and the design of facilities in the nursing home (Aarts & Westerlaken 2005, Evans *et al.* 2010). Second, if detected, more than half of the cases (63%) in nursing homes suffering from loss of basic visual abilities owing to visual impairments can be treated or prevented from further decline (Limburg & Keunen 2009). Third, visual impairment, as well as poor lighting conditions in nursing homes, not only can result in visual discomfort but also can be risk factors for falling (Legood *et al.* 2002, Horowitz 2004).

Documentation on visual functioning is necessary also for maintenance of continuity of care. For example, in the case of caregiver absenteeism, the substitute caregiver should be able to know with a glance at the client record whether a resident is normal-sighted or not. Hegde and Rhodes (2010) have underpinned the necessity of reporting on visual problems by maintaining that older adults tend not to report on visual problems by themselves.

Nursing documentation reflects residents’ needs and must be an instrument to supply all necessary information for care planning. Daily care should include awareness of vision problems as this is a prerequisite for adequate daily care and should be reflected in client records. In case of deterioration

of vision functioning, daily care should be adapted. Continuity of care is essential in nursing homes to maintain quality standard in care delivery. Therefore, without adequate documentation, the number of sick leaves in nursing homes (5.4%) (Peeters *et al.* 2008) can be a major threat to the continuity of quality care in the Netherlands.

In this study, vision problems of older adults in Dutch nursing homes are described in relation to the information gathered in care reports.

The aim of this study is to improve both eye care and daily care for nursing home residents by giving insight into the level of availability of information in client records and to assess whether professional caregivers are aware of this information. This is accomplished by data collection on the diagnosis of visual impairments and visual functioning, which is then compared to what has been registered in client records. This study is intended to enhance the awareness of professional caregivers in nursing homes and is part of a larger project on visual functioning and light conditions in the nursing home.

We focus on the following research questions:

- 1 Which problems occur with visual functioning in nursing home residents?
- 2 Is visual functioning of nursing home residents recorded in their records?
- 3 Is information recorded about the visual functioning of nursing home residents when they experience visual problems?

Background

In the Netherlands, 158,000 older adults are institutionalised and living in nursing homes or care homes (ten Draak 2010). A review by Evans and Rowlands (2004) showed that between 20–50% of older adults have undetected visual problems. This matches the proportion found in an earlier study in the Netherlands, which showed that 41.3% of older adults lose part or all of their vision owing to eye disease or normal ageing (Limburg & Keunen 2009).

Visual problems

As a result of the biological ageing process, the amount of light reaching the retina is reduced with increasing age (Bouma *et al.* 2006). A sixty-year-old person needs three times the amount of light to perform a task as compared to a twenty-year-old (Boyce 2003, Bouma *et al.* 2006, Jones & van der Eerde 2008, Limburg & Keunen 2009). Apart from visual problems owing to biological ageing, eye diseases such as cataracts, glaucoma, macular degeneration and diabetic retinopathy, can cause serious vision problems (Boyce 2003, Whiteside *et al.* 2004, Bouma *et al.* 2006, Verezen 2008). Limburg and Keunen (2009) state that 63% of older adults are estimated to suffer from avoidable blindness owing to cataracts, refractive errors and glaucoma. This proportion of cases of avoidable blindness in nursing homes is derived partly from the total proportion of cataract and refractive errors and partly from half of the proportion of glaucoma and diabetic retinopathy (Limburg & Keunen 2009). Cataract and refractive errors are seen as avoidable blindness, while glaucoma and diabetic retinopathy are viewed as avoidable blindness owing to prevention in 50% of these cases if diagnosed in time.

Visual impairments can affect several visual functions, such as visual acuity, light/dark adaptation, contrast sensitivity and loss of visual field. Some older adults are affected by a longer recovery time for the effects of glare resulting from reflected light from shiny objects or bright light directly reaching the eye (Silverstone *et al.* 2000).

Older adults with vision impairments should be detected for ophthalmological referral to prevent further decline in their sight as well as to ensure comfortable living and well-being and to decrease the risk of falling. To maintain quality of life of nursing home residents, special attention should be paid to the prevention of falls in older adults. Falling is a major problem for frail, older adults suffering from visual problems (Legood *et al.* 2002, Neyens 2007), and care can be adapted to prevent fall incidents. To decide for further referral to the ophthalmologist, the battery of testing visual function should contain such relevant tests as visual acuity, intraocular pressure, visual field and contrast sensitivity (Jessa *et al.* 2007).

Methods

This study is part of a larger project on visual comfort in nursing homes. The results of the study concerning the light conditions in nursing homes are already published (Sinoo *et al.* 2011). This study describes visual comfort from the perspective of visual functioning.

Study design

In this study, nursing homes in the central region of the Netherlands were enrolled. These nursing homes were willing to improve awareness of professional caregivers on the visual functioning of the residents. Four nursing home organisations showed interest and were included in the study. Out of a total of 686 residents in the four nursing homes, a minimal sample size of 242 residents was calculated using power analysis on the basis of a 41% proportion of low vision problems in the Dutch population (Limburg & Keunen 2009) (CI 95%, margin 5%).

Data collection

Selection of residents was performed on the basis of informed consent and willingness by residents or their family to participate. In the four organisations, 259 residents in total were willing to participate in the project. Data collection took place from February 2009–August 2010. Possible visual impairments of these 259 older adults were identified by a validated conventional eye assessment conducted by a qualified optometrist of Bartimeus (an organisation in the Netherlands that aims to improve quality of life for the blind and visually impaired by providing personal advice, guidance and knowledge http://www.bartimeus.nl/english_index). Subsequently, care reports of the participants are analysed in complementarily terms of visual impairments reported by the caregivers. All 259 records of the participating residents were analysed using a standardised form developed by Bartimeus.

Assessment of visual functioning

Within the framework of this study, visual functioning and visual impairments are assessed first by a visual functioning screening. The aim of this screening is to detect a range of visual problems. All examinations were conducted in the nursing homes. According to the definition of ICD 10 of the WHO, normal vision is defined across the two dimensions of vision acuity (> 0.3) or the visual field ($> 30^\circ$). Best-corrected visual acuity (BCVA) is assessed to categorise participating residents in groups of 'normal vision' or 'low vision or blindness'. The visual field assessment is conducted by a confrontational method, and residents are categorised in terms of an 'intact visual field' or a 'not intact visual field'.

The optometric assessments are made according to the standard procedure as developed by Bartimeus. A qualified optometrist and an administrative assistant of this organisation conducted the eye assessments; each assessment taking

approximately an hour. In preparation for the assessment, each assessment the optometrist receives medical and ophthalmological information—is recorded from the client records. During the assessment, the assistant administers the results on the visual functioning tests that are assessed by the optometrist. Accordingly, the assistant completes and checks the form filled out by the researcher on the medical and ophthalmological information from the client records.

The optometric assessment consists of several aspects and was conducted in the same standard order:

- 1 Examination of spectacles: if necessary, a new prescription is dispensed and annexed to the visual status report.
- 2 Identifying of residents with low vision (≤ 0.3) according to the WHO ICD 10 definition of visual acuity (BCVA).
- 3 Observation of visual functioning: visual field confrontation tests, contrast sensitivity, measurement of light sensitivity intraocular pressure with an Icare tonometer, and an ophthalmoscopic examination of the interior of the eye.

Assessment of client records

An initial screening of the client record is performed by the researcher before the optometric assessment. The purpose of this first screening is to provide the optometrist with information of the residents' status in preparation for the assessment. During the optometric assessment, this first analysis is completed by an optometric assistant.

The researcher visited the administration rooms of the nursing homes to analyse the client records. Client records were kept in folders for each client in three nursing home organisations. One nursing home organisation used electronic client records. In all nursing homes, the researcher was free to choose the moment to enter the offices in which records were kept. Screening of the client records is conducted on fixed categories: the number of medical diagnoses; the content of the diagnoses, eye diseases and treatments in the past; the use of spectacles or any information connected to visual problems; and the use of eye medication. These categories are analysed in the same order while the resident participates in the eye assessment.

Statistical analysis

Data analysis is carried out using SPSS 18.0 for Windows (SPSS Inc., Chicago, IL, USA) with a critical p -value of 0.05. Nonparametric statistics, using the Kruskal–Wallis H -test, were employed to test differences in age groups in the nursing homes. Chi square was applied to consider relations in cross-tabulations of the difference in recorded or unrecorded

information when receiving a prescription for new glasses, being diagnosed for 'low vision or blindness' or being referred to an ophthalmologist for further check-up. Chi square was carried out if more than 75% of the cells had an expected value of 5 or more.

Ethical approval

In the Netherlands, this type of research on standard care is not covered for review by the Medical Research Involving Human Subjects Act (<http://www.ccmo-online.nl>).

All residents are selected by willingness to participate in the study with informed consent. In all participating organisations, policy is an information procedure communicated by a letter sent to the residents or the family of residents, in which the visual assessment is explained and permission for analysis of the participants' record is explicitly formulated. In three of the nursing homes, it is a policy to always inform client boards explicitly about new research projects. As a special point of interest, it was mentioned that all results would be discussed with the participating residents or their family and a prescription for a new pair of spectacles would be dispensed if needed.

The residents or the family of residents signed an informed consent letter to participate in the study. Owing to cognitive problems, some residents were not able to decide on participation. In those cases, the family decided after communication with the resident. In the letter, the procedure of the study was explained and explicit approval was asked for the screening of client records. Residents or family of residents received the letter of informed consent from the ward in which they were residing. In this study, all participating residents or their families gave approval to participate.

Results

The number of participating residents was 259. The mean age of the 259 participating residents in the four organisations was 81.3. No statistical difference in age was found between the four participating nursing home organisations ($\chi^2 = 1.324$, $df = 3$, $p = 0.723$), which is a reflection of the population of Dutch nursing homes according to age, sex, and psychogeriatric or somatic syndrome.

Of the 259 participating residents, 163 (63%) were residing in psychogeriatric wards and 96 (37%) were residing in rehabilitation or somatic wards. In the Dutch population, the ratio of residents residing in psychogeriatric and somatic wards is 1:1 (ten Draak 2010), whereas in this study, the ratio is approximately 2:1.

Table 1 Cross-tabulation of the number of residents receiving a prescription for a new pair of spectacles and information found in the client records

	Spectacles		Total
	Prescription	No prescription	
No information on visual problems in client record	27	131	158
Information on visual problems in client record	17	84	101
Total	44	215	259

Information recorded in client files

The contents of all 259 client records were assessed on information in relation to visual functioning. In 101 (39%) of the 259 client records, some information was found.

Information recorded about the glasses of the participating residents

The first part of the visual assessment of 259 residents was to determine whether residents had the correct pair of spectacles needed for their visual acuity. Furthermore, a prescription (for a new pair) was prescribed if needed. As can be seen in Table 1, most participating residents (215 = 83%) did not need a prescription for a new pair of spectacles. Of the 44 (17%) residents who did receive a new prescription, no information on visual problems was found in the client records in 27 of these 44 cases (61%). No significant difference was found in the number of residents receiving a prescription or not in relation to the recording of information in the care reports ($\chi^2 = 0.003$, $df = 1$, $p = 0.957$).

Information recorded about low vision

For 13 of the 259 participating residents, an assessment of visual acuity was not possible because of poor physical

Table 2 Cross-tabulation of assessed residents with normal vision and low vision, or blindness and information found in the client records

	Low vision		Total
	Low vision/blindness	Normal vision	
No information on visual problems in client record	35	114	149
Information on visual problems in client record	29	68	97
Total	64	182	246

Table 3 Cross-tabulation of residents referred to an ophthalmologist for check-ups or to a centre and information found in the client records for rehabilitation

	Advice		Total
	Referral	No referral	
No information on visual problems in client record	80	78	158
Information on visual problems in client record	39	62	101
Total	119	140	259

alertness. In Table 2, a cross-tabulation of visual acuity outcomes in relation to recorded information is shown. The 246 assessed residents are grouped in two categories of 'normal vision' (182 = 74%) or 'low vision or blindness' (64 = 26%). In more than half of the cases assessed as 'low vision or blindness', no information on visual problems was found in the client records (35 of 64 = 55%). No significant difference was found between information in client records when residents had normal vision as compared to residents with low vision or blindness ($\chi^2 = 1.253$, $df = 1$, $p = 0.263$).

Referral for further check up

In Table 3, the results are shown of the total of 259 participating residents. One hundred and nineteen (46%) were advised to visit an ophthalmologist for further check-ups or to consult a rehabilitation centre. In a significant number of cases referred for further check-ups ($\chi^2 = 4.204$, $df = 1$, $p = 0.04$), no information on visual problems was found in the client records (80 of 119 = 67%).

Relatively more client records (80 of 119) of referred residents had no information at all in these cases as compared to the nonreferred residents (78 of 140).

Discussion

In this study, the proportion of participating women (78%) was slightly higher than that in the Dutch population of elderly care facilities [77% (Garssen 2011)]. The mean age of the 259 participating residents in the four organisations was slightly lower in this study (81.3) compared to 84.3 in the wider population (ten Draak 2010).

Information recorded in client files: prescription of new glasses

Results of this study show that no special attention is being paid to vision problems in the nursing homes. This confirms

the emphasis of several studies on screening of older adults in nursing homes (Silverstone *et al.* 2000, Evans & Rowlands 2004, Goldzweig *et al.* 2004, Hancock *et al.* 2006) and on environmental factors supporting the vision of nursing home residents (Bouma *et al.* 2006, Jones & van der Eerde 2008, Evans *et al.* 2010, Hegde & Rhodes 2010, van Hoof *et al.* 2010, Sinoo *et al.* 2011). In the case of prescriptions for new glasses, no statistical difference was found in the proportion of prescriptions and reporting in the client files. All residents appeared at the assessment with their own pair of spectacles, and no cases were observed in which residents wore spectacles of others from the ward. However, no special attention was paid to the relationship between wearing spectacles and visual functioning. Therefore, it made no difference in reporting whether or not a prescription for new spectacles was given. The same result was found in cases of low vision/blindness and normal vision.

The development and specialisation of eye care may indicate the failure of nurses to implement their duty in this area of care. Moreover, they might also see the purchase of glasses as an accessory like purchasing an article of clothing.

Professional caregivers in the nursing home should be more attentive to visual functioning in relation to glasses and ask about and report the quality of how residents function with their glasses. In the Netherlands, it is uncommon for an optician to visit nursing homes on a regular basis. Service by an optician could, therefore, be a solution for providing the right pair of spectacles and for assuring that it is recorded in client files. Nevertheless, professional caregivers still have the responsibility to report cases if they doubt the lack of visual functioning in relation to the use of glasses.

Information recorded in client files: low vision

In cases of low vision/blindness or normal vision again, no special attention was paid to reporting. Knowledge about the visual problems of the residents is required to adapt to their needs. To enhance the awareness of caregivers, the elderly care physician of the ward can take a first step of assessment in this process.

In this study, as a result of the assessment, the elderly care physician of the ward was handed a report of the visual status of the participating resident, and the report was appended to the client record. In this way, the possibility was created to enhance the knowledge of professional caregivers about visual functioning. This report could be discussed in multidisciplinary teams, including residents and their family. The elderly care physician of the ward can cooperate with an optometrist for further assessment if low vision is suspected.

Reporting in records about normal as well as low vision or blindness is important. Hence, if a resident is normal sighted, this should also be reported. In this study of the 246 assessed residents, 26% were categorised with low vision or blindness. This is a lower proportion as compared to the estimation of 41, 3% in the study of Limburg and Keunen (2009). In our study, low vision or blindness was registered according to the BCVA. The visual field was assessed by a confrontational method, but not used in the categorisation of vision. However, if the visual field was incorporated into the categorisation, the proportion of assessed residents with low vision or blindness would have been higher.

Information recorded in client files: referral for further check-ups

No information was documented in a statistical higher proportion of referred residents as compared to those residents not referred. Special attention should be paid to this group by screening for eye diseases to retain quality of life (Sloan *et al.* 2005) and, in addition, because of a higher risk of falls with low vision or blindness.

The role of professional caregivers is seen as an environmental factor in the ICF model. In a Cochrane review of five studies, Smeeth and Iliffe (2008) concluded that after assessment of visual problems, an intervention plan is needed. Adequate recording of these problems in client files can be a first step in this process. In Dutch nursing homes, professional caregivers are working in multidisciplinary teams and report on care and treatment approaches in the client file. Care problems are formulated in a process of reflection in these teams. Professional caregivers can discuss observations on residents and report on vision problems if observed. If necessary, the problem can be defined and described in the client file, resulting in a plan for action.

Older adults do not tend to report on visual problems by themselves (Hegde & Rhodes 2010). To be more effective in dealing with these problems, professional caregivers should be educated to distinguish between different aspects of visual functioning, such as visual field loss, decrease in visual acuity or blurred vision. Adequate care delivery to older adults with low vision should be part of the job of professional caregivers in the nursing home.

Although screening for visual functioning with a large battery of tests will increase costs, such screening of residents suffering from avoidable blindness owing to cataracts (55%) and those with high intraocular pressure (IOD) those suspected of glaucoma (8%) can be prevented from becoming blind (Limburg & Keunen 2009). This does not only guarantee a better quality of life for the persons involved,

but such an investment has a long-term economic payback as well. The more dependent patients become, the more care investment is needed. Screening of visual functioning can be performed by the elderly care physician. The optometrist can perform a supplementary screening for those residents suspected of eye pathology. Screening of visual problems is necessary to prevent further health deterioration. Therefore, special attention is needed in the educational programme for nursing home physicians as well as optometrists for screening nursing home residents.

The role of professional caregivers in visual functioning

The impact of vision problems in older adults should affect daily institutional care (Sharts-Hopko 2009) in creating a healthy environment for older persons with low vision. Professional caregivers can improve the quality of life of the nursing home resident by delivering adequate care (Brunnström *et al.* 2004) and by retrofitting the environment. This will stimulate the activity and participation of residents as formulated in the ICF model (WHO 2002).

Professional caregivers should be aware of lighting in the nursing home according to quality of illumination (Brawley 2009, van Hoof *et al.* 2009). For example, older adults need more light than younger people and will need to be seated at the window side of the common room (Sinoo *et al.* 2011). Caregivers can stimulate residents to alternate between lighter and darker corners without taking people out of their preferred seats. This can be done by organising leisure activities close to the window. The 'dark corners' of the living room can be designed as a television area during the evening hours. When illumination equipment is not sufficient, older adults should stay as close to the windows as possible during daytime (Sinoo *et al.* 2011).

Small changes in daily care can be of great importance for the visual impaired. However, assessment (Sloan *et al.* 2005) and documentation of vision problems is an important step in the improvement in quality of life.

Conclusions

One-third of nursing home residents have visual problems that need further examination by an ophthalmologist. These visual problems are not recorded in client records. No significant difference was found in whether information was recorded when residents had normal vision as compared to residents with low vision or blindness. Therefore, for the caregiver, it will not be clear whether 'no information' means that a resident is normal-sighted. Especially in those cases

with referral for further check-up, the lack of information was evident and could be improved.

Attention for improvement should be paid to visual functioning rather than to the glasses that residents wear. Visual impairment should be reported in the client file in order to be able to retrofit the environment and adapt daily care. Visual functioning of nursing home residents should be assessed and captured in client records to avoid the possibility of the residents developing correctable blindness. In addition, insight into visual impairments opens opportunities for professional caregivers to improve the environment and prevent residents from falling and succumbing to further health decline. Therefore, awareness of residents' visual impairments and insight into consequences for daily functioning is important for the alignment of basic daily care of the individual resident.

Relevance to clinical practice

Problems with visual functioning and vision impairments should be assessed in the nursing home for residents to avoid the affliction of correctable blindness. In addition, insight and awareness into visual problems opens opportunities for professional caregivers to develop and apply interventions for environmental adaptations and prevent residents from falling.

Awareness of residents' visual functioning and their visual impairments, which have consequences for their daily activities or social participation, will also support care professionals in their possibilities to adapt basic daily care to the residents' needs.

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Contributions

Study design: MS, HK; data collection and analysis: MS, HK and manuscript preparation: MS, HK, MD.

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