Major Depressive and Anxiety Disorders in Visually Impaired Older Adults

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Submitted: October 10, 2014 Accepted: January 6, 2015

Citation: van der Aa HPA, Comijs HC, Penninx BWJH, van Rens GHMB, van Nispen RMA. Major depressive and anxiety disorders in visually impaired older adults. *Invest Ophthalmol Vis Scl.* 2015;56:849–854. DOI:10.1167/ iovs.1415848 **PURPOSE.** We assessed the prevalence of subthreshold depression and anxiety, and major depressive, dysthymic, and anxiety disorders (panic disorder, agoraphobia, social phobia, and general anxiety disorder) in visually impaired older adults and compared these estimates with those of normally sighted peers.

METHODS. Cross-sectional data were analyzed based on telephone interviews with visually impaired older adults aged ≥ 60 years (n = 615) with a visual acuity of ≥ 0.30 logMAR (20/40 Snellen) in the best eye from outpatient low vision rehabilitation centers, and face-to-face interviews with community-dwelling normally sighted peers (n = 1232). To determine prevalence rates, the normally sighted population was weighted on sex and age to fit the visually impaired population. Logistic regression analyses were used to compare the populations and to correct for confounders.

RESULTS. The prevalence of major depressive disorder (5.4%) and anxiety disorders (7.5%), as well as the prevalence of subthreshold depression (32.2%) and subthreshold anxiety (15.6%), were significantly higher in visually impaired older adults compared to their normally sighted peers (P < 0.05). Agoraphobia and social phobia were the most prevalent anxiety disorders in visually impaired older adults.

Conclusions. This study shows that depression and anxiety are major public health problems in visually impaired older adults. Research on psychotherapeutic and psychopharmacologic interventions to improve depression and anxiety in this population is warranted. (http://www.trialregister.nl number, NTR3296.)

Keywords: depression, anxiety, low vision, aged

Vision loss is one of the leading causes of disability in older adults, and is associated with reduced quality of life and increased depressive and anxiety symptoms.¹⁻⁶ In turn, depression and anxiety may cause a further decline in quality of life, may aggravate disability caused by the visual impairment, and may increase vulnerability for health decline.⁶⁻⁹ By the year 2020 depression is expected to be the major cause of disease burden for older populations.^{10,11} The prevalence of visual impairment in developed countries is growing due to demographic ageing.¹ Therefore, the burden on eye care and mental health care for people with a visual impairment is expected to increase.

Research has mainly focused on symptoms of depression and anxiety in visually impaired older adults using screening questionnaires; showing that approximately one-third of visually impaired older adults experience clinically significant symptoms of depression and/or anxiety (also called subthreshold depression and/or anxiety).^{2,4–7,12–16} This is twice as high as the prevalence found in general elderly populations (approximately 16%).^{17–19} Only a few studies have focused on assessing major depressive and/or anxiety disorders according to the criteria of the diagnostic statistical manual (DSM) in visually impaired older adults.^{12,20,21} However, none of those studies gave a complete picture of threshold and subthreshold symptoms of depression and anxiety, and none distinguished between different anxiety disorders.

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This study aimed to investigate the prevalence of threshold and subthreshold symptoms of depression and anxiety in a large population of visually impaired older adults in comparison with normally sighted peers. The outcomes may offer important information on the impact of these problems in visually impaired older adults, and may direct researchers, policymakers, and clinicians on choosing specific interventions to address these problems in this vulnerable population.

The aims of this study were: (1) to determine the prevalence of subthreshold depression and anxiety, and the prevalence of major depressive disorder, dysthymic disorder, panic disorder, agoraphobia, social phobia, and generalized anxiety disorder according to the DSM-IV in visually impaired older adults (aged ≥ 60 years), and (2) to investigate whether these estimates of prevalence are significantly higher than those of normally sighted peers (aged ≥ 60 years).

METHODS

Visually Impaired Population

A cross-sectional study in older adults with a chronic visual impairment from outpatient low vision rehabilitation services in The Netherlands and Flanders (the Dutch speaking part of Belgium) was performed. Data were collected from September 2012 to July 2013 as part of the baseline measurement of a randomized controlled trial (RCT; trial registration, http://www. trialregister.nl, identifier: NTR3296).²² The RCT was approved by the Medical Ethics Committee of the University Hospital Leuven (Belgium) and the VU University Medical Center (Amsterdam, The Netherlands), and performed according to the standards of the Declaration of Helsinki (1964) and its later amendments.

To be able to participate, patients were registered at a low vision rehabilitation center in The Netherlands or Flanders. Eligibility criteria for these centers follow the World Health Organization (WHO) criteria and are described in the Dutch guideline "Vision disorders, rehabilitation and referral."23 This guideline dictates that all patients in low vision rehabilitation have a visual acuity of ≥0.52 logMAR (20/60 Snellen) and/or a visual field of $<30^{\circ}$ around the central point of fixation and/or an evident help request for which regular ophthalmic practice is not sufficient (e.g., contrast sensitivity and glare). For the latter criterion, patients may have had a better visual acuity and/or visual field than stated in the first two criteria. In addition, patients were aged \geq 50 years, had sufficient knowledge of the Dutch language, had no severely impaired cognitive functioning as measured with the Six-item screener, a short version of the Mini Mental State Examination (MMSE),24 and gave written consent to participate after explanation of the nature and possible consequences of the study.

A total of 3000 patients were invited to participate in the RCT; 914 gave their written consent (response rate, 30.5%). Data were collected by means of telephone interviews performed by trained personnel. To be able to compare this population with the normally sighted population, only patients aged \geq 60 years and those with a visual acuity of \geq 0.30 logMAR (20/40 Snellen) in the best eye were included. Therefore, data of 615 participants were finally available for the present study.

Normally Sighted Population

Cross-sectional data of community-dwelling normally sighted older adults were collected in 2008 and 2009 as part of the Longitudinal Ageing Study Amsterdam (LASA; available in the public domain at http://www.lasa-vu.nl).²⁵ This ongoing population-based cohort study was approved by the Medical Ethics Committee of the VU University Medical Center (Amsterdam, The Netherlands) and conducted according to the principles of the Declaration of Helsinki (1964) and its later amendments. All patients gave written consent to participate after explaining the nature and possible consequences of the study.

A random sample of older persons (aged 55-85 years), stratified for sex, age, and level of urbanization, was collected from population registers in 11 municipalities in The Netherlands. The collection of data started in 1992 and was followed by data collection cycles every three years. For the present study, data from the seventh measurement cycle (2008-2009) were used (all participants were ≥ 60 years old). Data were collected by means of face-to-face interviews. Interviewers were fully trained by certified staff. Of all eligible participants in this cycle (n = 1601), visual acuity in both eyes was measured in 87.1% of the cases (n = 1395), of which 1232 participants had a logMAR visual acuity in the best eye of 0.00 to 0.29 (indicating normal vision). They were included in the present study. Additional information on the LASA response details and sampling are described elsewhere.²⁵

Measures

Visual Acuity. In the visually impaired population, decimal visual acuity values were retrieved from patient files at low vision rehabilitation centers. Missing values (n = 97) were supplemented with answers that visually impaired older adults themselves

gave, based on ophthalmic diagnostics of which they were informed about by their ophthalmologist. In the normally sighted population, visual acuity was measured using the Colenbrander 1-meter chart.²⁶ Visual analogue scale (VAS) scores were measured for eyes separately (number of letters read correctly).

Visual acuity scores from samples were converted into logMAR values ($-\log_{10}$ visual acuity) to be able to compare the populations. A logMAR visual acuity of 0.00 to 0.29 indicated normal visual acuity, 0.30 to 0.51 indicated mild vision loss, and 0.52 to 2.00 indicated low vision or blindness.

Somatic Comorbidity. In both populations, patients were asked about their somatic comorbidity based on seven large condition groups: asthma or chronic obstructive pulmonary disease, cardiac disease, peripheral arterial disease, diabetes mellitus, cerebrovascular accident or stroke, osteoarthritis and rheumatoid arthritis, and cancer.

Subthreshold Depression and Anxiety. The Center for Epidemiologic Studies Depression scale (CES-D) was used in both populations, which determined the 1-week prevalence of subthreshold depression and anxiety. The CES-D is a valid instrument to use in Dutch older adult populations, and consists of 20 items covering depressive and anxiety symptomatology experienced in the past week with four response categories; scores range from 0 to 60 with a score of ≥ 16 indicating subthreshold depression and/or anxiety.27,28 As the criterion validity of the CES-D was considerably better for depression than for anxiety, the anxiety subscale of the Hospital Anxiety and Depression Scale (HADS-A) was used to optimize sensitivity and specificity.²⁹ The HADS-A determined the 4-week prevalence of subthreshold anxiety. This is a valid and often used instrument in Dutch older adult populations and consists of 7 items with four response categories; scores range from 0 to 21 with a score of ≥ 8 indicating subthreshold anxiety.30

Threshold Depression and Anxiety. The Mini International Neuropsychiatric Interview (MINI) was used in the visually impaired population, which determined the 2-week prevalence of major depressive disorder, the 2-year prevalence of dysthymic disorder, the 1-month prevalence of panic disorder, agoraphobia, and social phobia, and the 6-month prevalence of general anxiety disorder. The MINI has proven to be an appropriate tool to diagnose DSM-IV mood and anxiety disorders by telephone in Dutch clinical practice.³¹

In the normally sighted population only participants with a CES-D score of ≥ 16 were approached to participate in a diagnostic interview in which the official Dutch translation of the Diagnostic Interview Schedule (DIS) and the Composite International Diagnostic Interview (CIDI) were used. The DIS determined the 2-week prevalence of major depressive disorder according to the DSM-IV and has been widely used in older adults.³² The CIDI determined the 1-month prevalence of panic disorder, agoraphobia, and social phobia, and the 6-month prevalence of general anxiety disorder. The CIDI is a fully standardized, comprehensive interview, which has proven to be an appropriate tool to assess mental disorders according to the definitions of the DSM-IV.³³ Dysthymic disorder was not diagnosed in the normally sighted population.

The MINI and CIDI are comparable instruments as the κ coefficients, sensitivity, and specificity were shown to be acceptable for all diagnoses. 34,35 The DIS has not previously been compared to the MINI; however, it has acceptable agreement with the CIDI on measuring major depressive disorder (κ 0.66). 36

Sensitivity of the CES-D Questionnaire

Because a cut-off score of the CES-D (\geq 16) was used in the normally sighted population to determine if a diagnostic

TABLE 1. Patient Characteristics

| | Visually Impaired Population, | Normally Sighted Peers, | | Р |
|--|-------------------------------|-------------------------|----------|---------|
| Patient Characteristics | <i>n</i> = 615 | n = 1232 | Estimate | |
| Sex, female, <i>n</i> (%) | 377 (61.30%) | 658 (53.41%) | 10.37 | 0.001 |
| Age, y, range 60-98, mean (SD) | 77.60 (9.27) | 71.96 (7.89) | -13.64 | < 0.001 |
| Education, y, range 0-16, mean (SD) | 9.97 (3.61) | 10.19 (3.41) | 1.30 | 0.195 |
| Somatic comorbidity, range (0-6, mean (SD) | 2.00 (1.38) | 2.00 (1.34) | -0.12 | 0.906 |
| Visual acuity (logMAR) (mean (SD)) | 0.04 (0.07) | 0.89 (0.62) | -47.20 | < 0.001 |
| Categories: | | | | |
| 0.00-0.29 normal visual acuity | 0 (0%) | 1232 (100%) | | |
| 0.30-0.51 mild vision loss | 137 (22.3%) | 0 (0%) | | |
| 0.52-2.00 low vision/blindness | 478 (77.7%) | 0 (0%) | | |
| Eye disease, n (%) | | | | |
| Macular degeneration | 340 (55.3%) | | | |
| Glaucoma | 96 (15.6%) | | | |
| Cataract | 89 (14.5%) | | | |
| Diabetic retinopathy | 27 (4.4%) | | | |
| Other/unknown | 63 (10.2%) | | | |
| Time of onset, y, range 0-88, mean (SD) | 16.48 (20.02) | | | |
| | | | | |

SD, standard deviation.

interview would be conducted, the sensitivity of the CES-D was determined based on the complete visually impaired dataset (in which diagnostic interviews were conducted in all participants based on the MIND. The sensitivity of the CES-D (\geq 16) in the visually impaired dataset in relation to major depressive disorder according to the DSM-IV was 100%. For anxiety disorders (panic disorder and/or agoraphobia and/or social phobia and/or a general anxiety disorder), the sensitivity of the CES-D (\geq 16) was 80.0%. These findings indicated that all participants with a diagnosis of major depressive disorder and 80% of those with an anxiety disorder also had a CES-D score of \geq 16, supporting the claim that this cut-off score can be used to decide whether a diagnostic interview should be conducted. This increased the reliability of comparing the prevalence estimates between the two datasets in this study.

Statistical Analysis

Descriptive analyses were performed to characterize demographic and clinical characteristics of the visually impaired and normally sighted sample, which were compared based on independent sample *t*-test and χ^2 tests. The variable anxiety disorder was created based on having a panic disorder and/or agoraphobia and/or social phobia and/or a general anxiety disorder. The variables somatic comorbidity and education were recoded into the number of reported somatic conditions and the number of years having received education.

Women and participants in higher age groups were underrepresented in the normally sighted population compared to the visually impaired population. To determine comparable prevalence rates of depression and anxiety, this bias was corrected by sample weights based on the degree of underrepresentation. A weight was attached for each male and female, and for each age group in the normally sighted population, that adjusted any estimate to achieve the same expected value.

To allow correction for confounders (sex, age, education, and comorbidity), logistic regression analyses were performed on the unweighted dataset to compare the visually impaired and normally sighted population. In addition, logistic regression analyses were used to investigate the association between visual acuity and threshold and subthreshold disorders in the visually impaired sample. The SPSS 20 (SPSS, Inc., Chicago, IL, USA) was used to perform the analyses.

RESULTS

Patient Characteristics

In the visually impaired population, no significant difference was found between nonresponders and responders with respect to sex. However, nonresponders were significantly older than responders (mean difference, 4.6 years; P < 0.001). Of the nonresponders (n = 2086), 75.5% did not state a reason for not participating (in most cases because they were not reached by telephone to explain their nonresponse). Of those who did provide a reason (n = 511), the most common reasons for nonparticipation were unable due to physical or cognitive reasons (34.6%) and too great a burden (22.9%).

There were significantly more females in the visually impaired population, and the mean logMAR visual acuity and the mean age (mean difference 5.6 years) were significantly higher compared to the normally sighted population (Table 1). In the visually impaired population, more than 50% had macular degeneration and the mean time of onset was more than 16 years ago. The years of education and the number of somatic comorbidities were similar in the two populations.

Prevalence of Depression and Anxiety

Table 2 shows a significant difference in subthreshold depression and anxiety as well as major depressive and anxiety disorders according to the DSM-IV between the two compared populations. Of the visually impaired sample, more than 32% had subthreshold symptoms of depression and/or anxiety based on the CES-D, compared to 12% in the normally sighted sample (odds ratio [OR] = 4.46). More than 15% had subthreshold symptoms of anxiety based on the HADS-A, as opposed to 11% in normally sighted peers (OR = 2.84). In addition, 5.4% were diagnosed with a major depressive disorder and 7.5% with an anxiety disorder according to the DSM-IV, compared to 1.2% and 3.2% in the normally sighted sample (OR = 5.56 and OR = 2.91, respectively). Particularly, agoraphobia (4.2%) and social phobia (2.4%) were significantly

 TABLE 2.
 Prevalence of Depression and Anxiety in the Visually Impaired and Normally Sighted Population and (Un)Adjusted Odds Ratio's Based on Logistic Regression Analysis

| | Percentage Visually Impaired Population | Percentage Normally Sighted Population* | | | |
|--------------------------------------|--|--|----------------------------|---------------------------|--|
| Symptoms | (95% CI) n = 615 | (95% CI) n = 1232 | OR Uncorrected (95% CI) | OR Corrected† (95% CI) | |
| CES-D score ≥ 16 | 32.20% (28.51 to 35.98) | 12.01% (10.33 to 13.69) | 4.40 (3.43 to 5.65) | 4.46 (3.37 to 5.90) | |
| HADS-A score ≥ 8 | 15.61% (12.74 to 18.48) | 10.69% (9.09 to 12.29) | 2.27 (1.68 to 3.07) | 2.84 (2.04 to 3.95) | |
| Major depressive disorder | 5.36% (3.58 to 7.14) | 1.23% (0.66 to 1.80) | 5.32 (2.77 to 10.18) | 5.56 (2.79 to 11.08) | |
| Dysthymic disorder | 0.98% (0.20 to 1.76) | Not measured | | | |
| Anxiety disorder | | | | | |
| Panic disorder without agoraphobia | 0.16% (-0.15 to 0.48) | 0.53% (0.16 to 0.90) | 0.25 (0.03 to 2.00) | 0.36 (0.04 to 2.91) | |
| Panic disorder with agoraphobia | 0.33% (-0.12 to 0.78) | 0.26% (0.00 to 0.52) | 1.00 (0.18 to 5.48) | 1.72 (0.28 to 10.27) | |
| Agoraphobia without panic disorder | 4.22% (2.63 to 5.81) | 1.31% (0.72 to 1.90) | 3.16 (1.70 to 5.86) | 3.60 (1.86 to 6.99) | |
| Social phobia | 2.44% (1.22 to 3.66) | 0.88% (0.40 to 1.36) | 2.78 (1.27 to 6.08) | 3.30 (1.43 to 7.61) | |
| General anxiety disorder | 1.79% (0.74 to 2.84) | 0.96% (0.39 to 1.53) | 2.02 (0.87 to 4.69) | 2.18 (0.90 to 5.35) | |
| Total | 7.48% (5.40 to 9.56) | 3.24% (2.21 to 4.27) | 2.29 (1.49 to 3.52) | 2.91 (1.83 to 4.64) | |
| Depressive and anxiety disorder | 2.28% (1.10 to 3.46) | 0.26% (-0.04 to 0.56) | 9.54 (2.73 to 33.33) | 12.91 (3.59 to 46.36) | |
| Depressive and/or anxiety disorder | 10.57% (8.14 to 13.00) | 4.29% (3.11 to 5.47) | 2.68 (1.84 to 3.92) | 3.14 (2.08 to 4.75) | |
| History of major depressive disorder | 11.38% (8.87 to 13.89) | 4.03% (2.89 to 5.17) | 3.17 (2.16 to 4.64) | 3.92 (2.59 to 5.94) | |

Bold is significant at $P \le 0.05$. CI, confidence interval; CES-D, Center for Epidemiologic Studies Depression; HADS-A, Hospital Anxiety and Depression Scale – Anxiety.

* Weighted on age and sex based on the visually impaired sample.

† Corrected for sex, age, education, and comorbidity.

more prevalent in the visually impaired population (OR = 3.60 and OR = 3.30, respectively).

More than 10% of the visually impaired sample was diagnosed with a major depressive and/or anxiety disorder, compared to 4.3% of their normally sighted peers (OR = 3.14). Of the visually impaired population, 2.3% had a major depressive and anxiety disorder; 42.4% of the participants with a depressive disorder also were diagnosed with an anxiety disorder and 30.4% of the participants with an anxiety disorder and 30.4% of the participants with an anxiety disorder and 30.4% of the participants with an anxiety disorder and 30.4% of the participants with an anxiety disorder also were diagnosed with a major depressive disorder. Of the visually impaired population, more than 11% had a major depressive disorder once in their lifetime, compared to 4% of their normally sighted peers (OR = 3.92).

Visual acuity did not prove to be a predictor of either threshold or subthreshold depression, or anxiety in the visually impaired sample (P > 0.05).

DISCUSSION

Investigative Ophthalmology & Visual Science

To our knowledge, the present study is the first to investigate the prevalence of threshold and subthreshold symptoms of depression and anxiety in a large population of visually impaired older adults in comparison with normally sighted peers. The study clearly indicated that subthreshold symptoms as well as actual depressive and anxiety disorders are a major health problem in visually impaired older adults.

The 1-week prevalence of subthreshold depression and anxiety, based on the CES-D, of 32.2% was consistent with other studies^{2,4-7,12-16} and significantly higher than the prevalence found in the normally sighted population (12.0%). In addition, the 4-week prevalence of subthreshold anxiety, based on the HADS-A, was 15.6% and also significantly higher than that found in normally sighted peers (10.7%). To date, only a few studies have examined the association between anxiety and visual impairment. Augustin et al.⁶ found that 30.1% of older adults with age-related macular degeneration met the criteria for subthreshold anxiety (HADS-A score \geq 8). Soubrane et al.¹² and Kempen et al.³⁷ compared older adults with and without vision impairment, and found significantly higher estimates of subthreshold anxiety in the visually

impaired population (based on the HADS-A). However, they did not report prevalence rates based on the cut-off score. Evans et al.⁵ found that 13.5% of a visually impaired adult population had subthreshold anxiety (score of ≥ 6 on the Geriatric Depression Scale) as opposed to 4.6% in a nonvisually impaired population.

In the present study, the 2-week prevalence of major depressive disorder of 5.4% was considerably higher than the prevalence in the normally sighted population (1.2%). Only a few studies have determined the prevalence of major depressive disorder in a visually impaired population. Bernabei et al.²⁰ found a prevalence of 20.2% vs. 9.3% for "depressive syndrome" in a visually impaired versus a normally sighted older population (aged ≥ 60 years), based on the International Classification of Disease (ICD-9).²⁰ Although the ICD-9 system does not use the term "major depressive disorder" it lists very similar criteria for the diagnosis of a depressive episode. The higher prevalence can be explained by the fact that the authors took depressive and dysthymic disorders into account.²⁰ However, the combined prevalence of these two disorders in the visually impaired population of the present study still is considerably lower (6.4%). Since the mean prevalence of major depressive disorder in community studies is 1.8%,17 the prevalence estimates found by Bernabei et al.²⁰ seem rather high. Brody et al.¹³ and Horowitz et al.²¹ found a prevalence of approximately 7% of major depressive disorder in visually impaired older adults, based on the DSM-IV criteria. Our findings are similar to those studies. The small difference might be because our population was slightly younger and because Brody et al.¹³ only included patients with advanced macular degeneration, whereas we included older adults with various eye diseases and stages of the disease.

To our knowledge, this is the first study to examine the 1month prevalence of panic disorder, agoraphobia, and social phobia, and the 6-month prevalence of general anxiety disorder in a visually impaired population. The prevalence of anxiety disorders of 7.5% was significantly higher in the visually impaired population compared to normally sighted peers (3.2%). Bernabei et al.²⁰ found higher prevalence estimates of 10.6% and 11.0%, respectively. A systematic review of the study of Bryant et al.38 showed that the prevalence of anxiety disorders in community samples ranged from 1.2% to 15%, a wide range that could be explained partly by conceptual and methodological inconsistencies between the studies. We found that agoraphobia (4.2%), social phobia (2.4%), and general anxiety disorder (1.8%) were most prevalent in the visually impaired population. Agoraphobia and social phobia were even significantly more prevalent in this population compared to their normally sighted peers, indicating that visually impaired older adults are especially vulnerable to develop anxiety disorders related to specific places or situations (such as being on a bus or in a crowd) and social situations (such as speaking in public or eating in the company of others). This may direct researchers and clinicians in developing and investigating specific interventions to address these problems in this inherently vulnerable population.

It should be noted that internationally there are some concerns about the validity of the DSM manual, as it uses a medical model and a categorical classification rather than considering a dimensional approach concerning the understanding of psychological experiences.^{39,40} However, the DSM is internationally relied upon by many researchers, clinicians, psychiatric drug regulation agencies, health insurance companies, pharmaceutical companies, the legal system, policy-makers, and, thereby, contributes to the uniformity of diagnostics and consistency with clinical practice.⁴⁰ Therefore, we believe using the DSM manual in the present study, and additionally including dimensional models of depression and anxiety (measured with the CES-D and HADS-A) was appropriate.

Furthermore, the estimates of prevalence mentioned in this study imply that it is applicable beyond the subset of individuals that were investigated. However, the patients who volunteered and were selected for this study might differ from other eligible individuals in the total population, reducing generalizability of the results. Responders were significantly younger than nonresponders in the visually impaired population, and had less physical and cognitive problems, which may have led to an underestimation of depression and anxiety rates in this sample. Study participants also may have had a higher perception of the need for and better access to health care and may have been more motivated based on hope of personal gain or altruism.

A limitation of this study is that a nonresponse analysis in the normally sighted population was missing. In addition, missing decimal visual acuity values were supplemented with self-reports, which may have increased uncertainty of the results. Furthermore, the sensitivity of the CES-D was 80% for anxiety disorders. Although this is a high and acceptable percentage, some anxiety disorders may have been missed in the normally sighted sample, introducing an underestimation of the results. Finally, differences in prevalence rates might be due to differences in assessment methods (i.e., telephone interviews versus face-to-face interviews)⁴¹ and used diagnostic instruments. The MINI and CIDI are comparable instruments, however, the DIS has been compared to only the CIDI. Although instruments use the DSM-IV criteria to diagnose a major depressive disorder, it is unclear if part of the differences between cases and controls could be explained by differences between these instruments.

However, based on these results, it cannot be denied that depression and anxiety are a major health problem for visually impaired older adults. As the prevalence of visual impairment in developed countries is increasing¹ it is expected that the pressure on eye care and mental health care will increase in the future. Clinicians (e.g., general practitioners, ophthalmologists, and staff from low vision rehabilitation services) should anticipate on this growing demand by screening for depression and anxiety in an early stage of the complaints to prevent them from deteriorating, and offer specific evidence-based interventions to reduce threshold and subthreshold symptoms of depression and anxiety. Some research on interventions to improve depression and anxiety in visually impaired older adults already has been conducted.⁴²⁻⁴⁴ However, standardized practice is lacking and extensive research on psychotherapeutic and psychopharmacologic interventions in this population is warranted.

Acknowledgments

Supported by Grant 60-0063598108 from ZonMw InZicht (Dutch Organization for Health Research and Development – InSight Society). The authors alone are responsible for the content and writing of the paper.

Disclosure: H.P.A. van der Aa, None; H.C. Comijs, None; B.W.J.H. Penninx, None; G.H.M.B. van Rens, None; R.M.A. van Nispen, None

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