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Training results in increased practitioner confidence and identification of depression in people with low vision: a mixed methods study

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Abstract

Purpose: The prevalence of depression in people with low vision is high and often goes undiagnosed. There is the potential for those who provide low vision services to perform concurrent depression screening. However, prior training in depression identification and suitable referral pathways is required. The aims of this study were: (1) to assess the impact of a training programme on practitioners' confidence and behaviour in addressing depression in patients with low vision, and (2) to review the training programme and identify areas for further development.

Methods: A convergent mixed methods approach was used. Questionnaires were completed by practitioners pre-, immediately post- and 6 months post- training (n = 40) to assess practitioner confidence in approaching depression in patients with low vision. Qualitative interviews were performed with a subset of practitioners 6 months post-training (n = 9). Additionally, routine data from the Low Vision Service Wales (LVSW) database was used to determine the change in the number of practitioners identifying depression in patients, and the change in the number of patients identified at risk of depression 6 months post-training.

Results: Of the 148 practitioners who completed low vision assessments pre- and post-training, 28 (18.9%) documented risk of depression in their patients pre-training, which increased substantially to 65 (43.9%) post-training ($p < 0.0001$). Mixed methods analysis confirmed increased documentation of depressive symptoms by practitioners. Practitioner confidence increased following training, with 92.3% feeling more confident to approach emotional issues with patients and 92.2% intending to use the recommended screening tool to identify depression. Interviews provided insight into areas where confidence was still lacking. Quantitative questionnaires revealed that training content was considered appropriate by 91% of participants. Interviews confirmed these findings while expanding upon possibilities for programme improvement.

Conclusions: Training for depression screening was found to be time-efficient and acceptable for LVSW practitioners and shown to increase practitioner confidence in the identification of depression. Additionally, the programme changed behaviour, resulting in an increase in the identification of depression in patients with low vision. However, this is a complex topic and ongoing development is required to embed depression screening as an integral part of low vision services.

Introduction

Depression is characterised by low mood and a loss of interest or pleasure in activities[1]; other symptoms include a range of physical and cognitive changes.[2] Depression is a leading contributor to disability worldwide, affecting an estimated 4.4% of the global population, with prevalence increasing with age.[3] Many risk factors for depression have been identified, including the presence of chronic health conditions.[4] Individuals who live with such conditions are more likely to experience depression,[5,6] which can result in greater levels of disability and worsened health-related quality of life.[7]

Depression can worsen the prognosis of a chronic condition,[7] increase the need for rehabilitative care[8] and result in an increased cost to both healthcare and society.[9,10] It is therefore important that depression is detected and addressed. The National Institute for Health and Care Excellence (NICE) guidelines advise that practitioners be alert to depression, particularly in those with a chronic physical health problem with resultant functional impairment, and consider asking two questions[11,12] to rule out possible depression.

Low vision is a chronic condition often associated with co-morbidity, feelings of isolation,[13] increased risk of falls[14,15] and worsened health-related quality of life,[16] all of which can negatively impact upon mental health. Indeed, the prevalence of both sub-threshold and threshold depressive symptoms is higher in those with low vision than without. Nollett *et al.*[21] report a prevalence of significant depressive symptoms of 43% in those using low vision services, while van de Aa *et al.*[22] report (sub-) threshold symptoms of depression and/or anxiety of 32% and 12% in visually impaired and normally sighted people, respectively. These findings are significant, and compounded by the fact that depression often goes undetected.[17,23]

There is potential for eye care practitioners who provide rehabilitative services to this high-risk group to screen for depressive symptoms.[24–27] An Australian study reported a significant decrease of depressive symptoms in patients who screened positive for depression as part of a low vision assessment and attended a subsequent General Practitioner (GP) appointment.[28]

Despite the high prevalence of depression in those using low vision services,[21] screening for depression is not currently routine practice. Our exploratory study in Wales, United Kingdom, found that only 33% of low vision practitioners aimed to identify depression in patients, with very few using formal screening tools to aid identification.[29] Worryingly, only 17.9% of all practitioners recorded a risk of depression for any of their patients in a 6-month period. A key barrier to identifying and addressing depression was the practitioners' lack of confidence in their ability to recognise and discuss depression. The majority expressed a need for training on depression prior to screening and referral pathways being introduced. These findings are supported by several studies.[24,30,31]

Depression training programmes for eye care professionals have been evidenced as effective in increasing confidence and self-reported intention to address depression as part of clinical practice.[31,32] However, to date, there is a lack of evidence supporting actual change in practice following training in identifying depression in individuals with low vision.

The aim of this study was twofold. First, to assess the impact of a training programme on practitioners' confidence and behaviour in addressing depression in patients with low vision. Second, to review the training programme and identify areas for further development.

The novel aspects of this study are, the use of routine clinical data to measure change in practice and the mixed methods combining questionnaires and interviews to provide enhanced insight and understanding of a research problem, which may not be achieved using either method in isolation.[33]

Methods

Study design and participants

The Low Vision Service Wales (LVSW) is a national primary care low vision service that supports the rehabilitative needs of around 10 000 people with low vision each year[34] and forms the setting for this pre-post study. In this convergent mixed methods study, both qualitative and quantitative approaches were used. Qualitative and quantitative data were collected and analysed concurrently in order to link both sets of data.[35]

Data collection and results prior to training in the identification and management of depression (pre- training phase) are described in full elsewhere.[29] In brief, the LVSW database was utilised to determine the number of patients identified at risk of depression pre-training and 6 months post-training.

Prior to training, participants had no formal service guidance on how to identify depression. Post-training, risk of depression was determined using the two Whooley questions[12] (*Figure 1*). These questions are recommended by NICE for the consideration of depression in adults with a chronic health problem which impacts on daily functioning.[11] When applied to older adults in the UK primary care setting, the questions have a sensitivity of 94.3% and a specificity of 62.7%.[36]

Pre-training and 6 months post-training, data were collected at the same time of the year to negate the potential of seasonal variation in the prevalence of depression affecting results. Data regarding practitioner's behaviour and confidence in identifying depression in people with low

1. During the last month, have you often been bothered by feeling down, depressed or hopeless?
2. During the past month, have you often been bothered by having little interest or pleasure in doing things?

Figure 1. The two Whooley questions as recommended by the National Institute for Health and Care Excellence (NICE) for the consideration of depression in adults with a chronic health problem which impact on daily functioning.

vision was collected pre-training, immediately post-training and 6 months post-training using a previously validated questionnaire.[37] Qualitative data was collected through face-to-face, semi-structured interviews 6 months post-training. The quantitative questions from the confidence questionnaire, LVSW record cards and training programme evaluation were mirrored in, and formed the basis for, the interview topic guide.

Integration occurred through linking the methods of data collection and the analysis,[35] with both qualitative and quantitative data being collected and analysed concurrently. The research study design is outlined in *Figure 2*.

All research practice followed the guidelines of the Declaration of Helsinki and ethical approval for the study was granted from the School Research Ethics Audit Committee at the School of Optometry and Vision Sciences, Cardiff

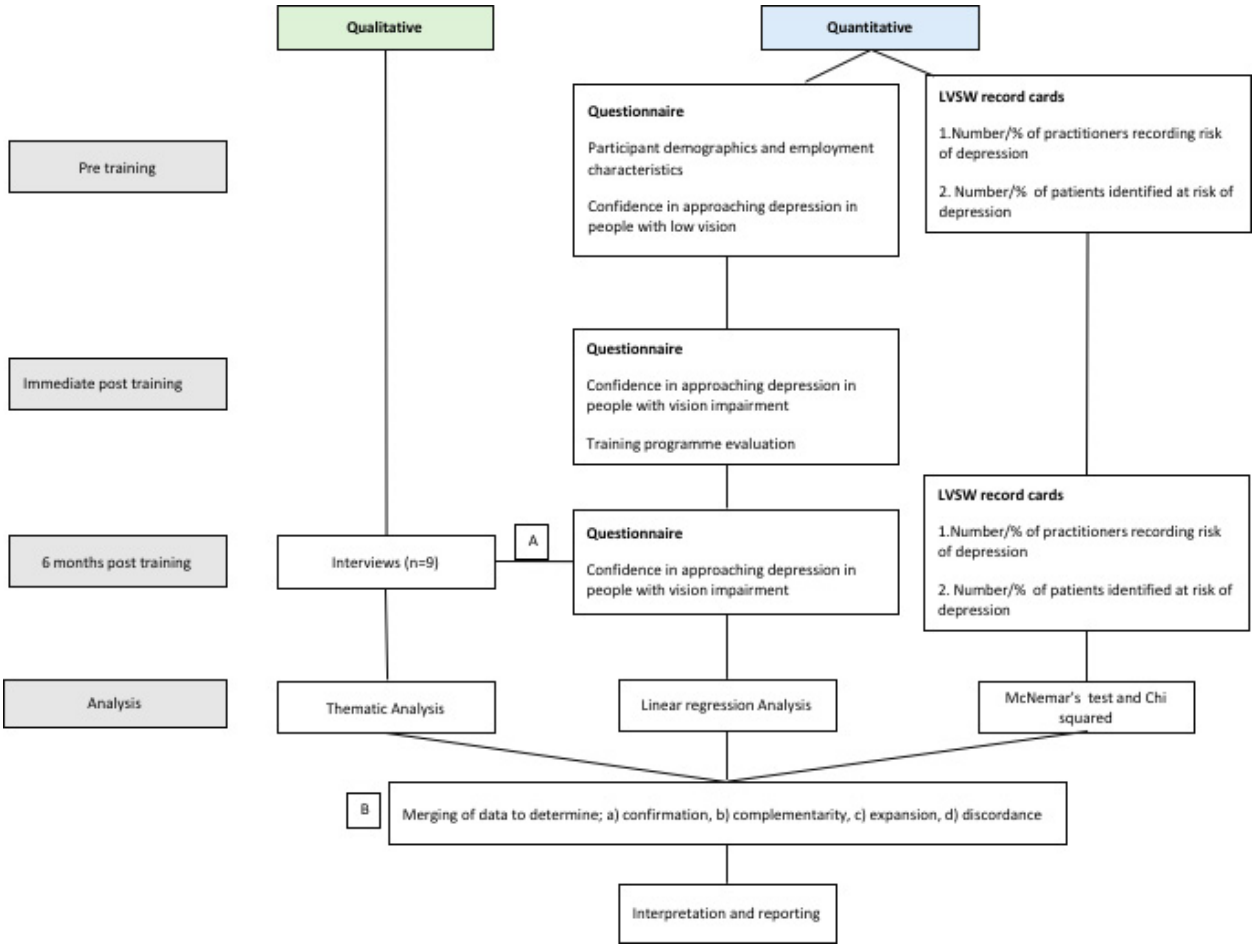

Figure 2. The mixed methods study design, outlining convergent method of data collection and analysis. Integration is shown at point A (in which the questionnaire informed the interview questions), and point B (in which data were merged to determine 'confirmation,' where qualitative and quantitative data led to the same interpretation, 'complementarity,' where data sets showed different, non-conflicting interpretations, 'expansion' a hybrid of the confirmation, and complementarity and 'discordance' where conflicting interpretations are met).[35]

University (ref. 1457/1472). All participants received Participant Information Sheets and informed consent was sought prior to participation.

Participants

LVSW practitioners (optometrists and dispensing opticians; $n = 193$) were eligible for recruitment. Those who had previously undertaken training with regards to depression ($n = 12$) in relation to an earlier research study[21] and the clinical lead for the service (author RB) were excluded.

A subset of 12 practitioners were invited to take part in qualitative interviews and were selected using a maximum variation strategy of purposive sampling. Through this process, we aimed to include a mix of male/female, rural/urban location of practice, a range of time accredited as a LVSW practitioner, practice based/domiciliary based practitioners, and optometrists/dispensing opticians.

All other LVSW practitioners were invited to complete an online questionnaire as part of the training pre-reflection, post-reflection and follow-up task. Practitioners were given the option to consent to their data being used for the purpose of this study.

Training programme

Overview

Practitioners registered with the LVSW complete mandatory training which consists of a formal qualification in low vision[38] and 3-yearly re-accreditation. In 2018, training in the identification of depression in patients with low vision and in the use of associated referral pathways was delivered to support the roll out of new service guidance.[39] As part of the overall re-accreditation programme, the training consisted of an initial distance learning online lecture, followed by an interactive peer discussion workshop. The content of the training was informed by evidence on eye care practitioner training preferences,[30,31] our previous work[29] and stakeholder input.

Each educational session met the General Optical Council (GOC) UK guidelines on teaching delivery.[40] The training was delivered free of charge and no monetary incentives or reimbursements for attending were provided. However, successful completion of each aspect of the training programme resulted in the award of Continuing Education and Training (CET) points, which contribute to professional registration in the UK.

Distance online learning

The aim of the online lecture was to provide; a theoretical overview of depression and its association with vision impairment, an overview of current research and clinical guidelines and an introduction to screening for depression. The lecture was written and recorded by a consultant psychiatrist, with a speciality in older people's psychiatry and presented using visual slides with accompanying audio. Practitioners completed the 1-hour online training independently, prior to attending the workshop, and were required to pass a series of multiple-choice questions.

Contact training: peer discussion workshop

Practitioners attended a peer discussion workshop, the aim of which was to review and augment the knowledge learned in the online lecture, with a focus on three important themes; The importance of depression screening, service protocols and pathways, communication with the patient and making a referral (*Table 1*). Each workshop was delivered by the LVSW clinical lead and clinical tutor. Both are LVSW optometrists, experienced in delivering postgraduate education, with training in depression and in peer review facilitation.

Table 1. Overview of the Low Vision Service Wales (LVSW) depression discussion workshop

Training session section and title	Content summary	Delivery
Part 1 The importance of depression screening, service protocols and pathways	What is your understanding of depression? What would alert you to a mood disorder in a patient? Should we screen? Why? NICE guidelines, LVSW depression screening protocol and pathways	Small group discussion with whole group feedback to facilitator
Part 2 Communication with the patient	How to screen for depression within a LVSW assessment Identification and management of suicide risk Offering a referral Managing resistance to referral Gaining consent for referral When consent isn't required	Groups provided with a patient scenario Practitioners role play response to patient script
Part 3 Making a referral	Methods of referral (Urgent and routine) Required content for referral Urgency of referral	Practitioners required to write a mock referral letter, discussed as a group

NICE, National Institute for Health and Care Excellence.

The 1.5-h workshops were delivered in a classroom setting with layout to promote discussion. They were held in 12 locations around Wales to facilitate participation, and the venues were either university buildings or conference centres. Each workshop was attended by between 8 and 20 practitioners, with a maximum discussion group size of 10.

A course booklet was provided, detailing learning objectives, NICE guidelines on depression management,[1] instructions for group task exercises and a post-session reflection form. The lead facilitator guided the group through a discussion formed of three parts (*Table 1*). Each section was scripted, thereby ensuring all aspects of the planned content were delivered with minimal variation at each teaching session. Identical training material was provided, and teaching plans were followed at each workshop with no unplanned changes to materials or educational strategies.

Implementation

Following the training, service guidance was implemented to incorporate depression screening, with the use of the two Whooley[12] questions. The service guidance states that if the patients answer 'yes' to either of these questions, they should be offered referral to the GP for further assessment and management.[39]

Measures

Low Vision Service Wales (LVSW) record card

Since 2016, the LVSW record card has included a single tick box to indicate whether the practitioner considers the patient to be at risk of depression as part of the 'risks identified' section of the card (*Figure 3*). Data from each LVSW assessment are routinely collected and stored on the national LVSW database. Data were extracted and analysed to determine: (1) the number and percentage of practitioners recording depression for at least one patient in the 6-month periods pre- and post-training and (2) the number and percentage of patients recorded as being at risk of depression in the 6-month period pre- and post-training.

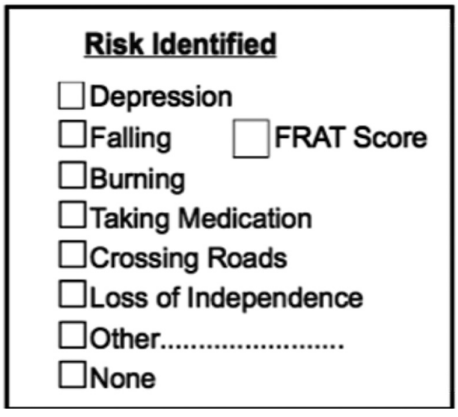

Figure 3. Low Vision Service Wales (LVSW) record card 'Risk Identified' section. The 'risk of depression' box is a single tick box, which has been present on the LVSW record card since 2016.

Questionnaire

A questionnaire previously developed and refined using the Rasch measurement model and validated for use by eye care professionals to determine practice relating to identification and management of depression[37] was used to collect the following: (1) participant demographics and employment characteristics; (2) confidence in approaching and screening for depression in people with a vision impairment (11 item scale, e.g., 'in asking patients with vision impairment about their feelings or mood, I feel…' responses provided on a Likert-type Scale 'not confident, slightly confident, mostly confident, very confident') and (3) training programme evaluation.

Participant demographics and employment characteristics were collected at baseline. Programme evaluation was collected immediately post-training, and confidence in approaching and screening for depression in those with vision impairment was collected at baseline, immediately post-training and 6 months post-training to assess change over time. Participants completed the questionnaires anonymously.

The questionnaire was presented to participants using an online format hosted via Online Surveys.[41] Prior to launch it was comprehensively tested and any identified errors were corrected.

Qualitative interviews

Interviews followed a semi-structured format and were performed either over the telephone or face-to-face, depending upon interviewee location and preference. An experienced researcher (CN), independent of the LVSW and previously unknown to LVSW practitioners, performed the interviews, thereby limiting the risk of bias.

The interview guide was developed based upon the questionnaire items regarding confidence, practice in the identification and management of depression and training programme evaluation.[37] The guide consisted of seven key questions with prompts for each, for use in the case that the practitioner was not forthcoming (See Supplementary Material 1). The guide was piloted with a LVSW practitioner. At the beginning of the interview, a brief questionnaire was administered to collect socio-demographic data consistent with the online questionnaire. All interviews were audio recorded.

Analysis

Psychometric assessment of questionnaire

Rasch analysis is a probabilistic logistic model, based on the principle that participants with a higher level of the trait or ability being measured should have a greater likelihood of getting a higher score on items assessing that trait/ability and vice versa.[42] If this assumption holds true, participant responses are transformed into interval-level person measures that are measured in log of the odds units (logits). Additionally, these analyses are used to confirm instrument unidimensionality and assess the reliability of item measures. Analysis was undertaken using the Andrich Rating Scale model[43] via the Winsteps software version 3.92.1 (www.winsteps.com), to assess the questionnaire scales. A detailed description of this process applied to the data is published elsewhere.[29]

Responses were recoded so that higher scores indicated greater confidence in working with individuals with concomitant low vision and depression ("confidence" scale). To generate valid pre-post person measures, data were stacked and anchored to item calibrations at baseline. After iteratively removing misfitting items and those displaying item bias (items 7–11 from the confidence scale), the questionnaire scale displayed adequate psychometric properties with ordered response thresholds, good precision (able to distinguish at least three levels of participant ability), no misfitting items or Differential Item Functioning (DIF), and importantly, no evidence of multidimensionality. The analyses are unique to the longitudinal data presented here, as we also needed to ensure psychometric validity of participant responses over time. This is also why more items were removed for this set of longitudinal participant responses (five items) versus the previously published cross-sectional data (three items).[29]

Following this process, the remaining questions were: In asking patients with vision impairment about their feelings or mood, I feel. . .; In listening to patients with vision impairment talk about their feelings or mood, I feel. . .; In being able to recognise that a patient with vision impairment might be depressed, I feel. . .. . .; In knowing which signs to look for to tell if a patient with vision impairment might be depressed, I feel. . .; In knowing if a patient might have depression or is just dissatisfied with their current situation, I feel. . .; In discussing my concerns about possible depression with a patient's family members, I feel. . .. . ..

There was minimal difference between item difficulty and person ability indicating that the items were suitably targeted to the participant population. Person measures (in interval level log-odds units [logits]) were then exported for use in subsequent parametric testing.

Statistical analysis

LVSW record card data was analysed using descriptive statistics. The change in practice of LVSW practitioners in the recording of patients with depression pre- and post-training was determined using the McNemar test. Additionally, the change in the number of patients recorded as being at risk of depression following training was determined using the Chi Squared test, therefore providing an objective measure of change in practice.

The final sample of questionnaire data consisted of responses from participants who had completed the questionnaire at each of the three time points. Demographic data, work characteristics and the training programme evaluation were presented with the use of descriptive statistics.

Linear regression was undertaken to examine: (1) the change in 'confidence' scores pre- to immediately post-training and (2) the change in 'confidence' scores pre- to 6 months post-training; and the data were clustered within person to account for the repeated measurements. All statistical analyses utilised STATA version 13 (www.stata.com).

Qualitative analysis

A professional transcription company was used to transcribe the interviews verbatim. Transcripts were checked for accuracy. Data were analysed using Thematic Analysis. This method emphasises the identification, analysis and interpretation of themes in the qualitative dataset.[44] To facilitate integration of quantitative and qualitative data, a 'codebook' approach was utilised in the analysis, in which three deductive themes were specified to align with the quantitative data: use of low vision record cards, confidence in addressing depression in individuals with low vision and training programme evaluation. Analysis followed a process of familiarisation of data, identification of codes and assignment of codes to the identified themes. Interview transcripts and the researcher's reflexive journal were reviewed to ensure that the codes reflected the original data. They were also discussed with the research team throughout the process. NVIVO version 11 (www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home) was used to facilitate organisation of data.

Mixed methods analysis

The merging of data sets allows outcomes to be categorised as, 'confirmation,' where qualitative and quantitative data lead to the same interpretation; 'complementarity,' where data sets show different, non-conflicting interpretations; 'expansion,' a hybrid of the confirmation and complementarity and 'discordance,' where conflicting interpretations are met.[45] The findings were integrated through a narrative in the report using the weaving approach, in which qualitative and quantitative results are presented theme by theme.[35]

Results

Participants

Overview

Of the 193 LVSW practitioners (optometrists and dispensing opticians), 180 were eligible to take part in the study. Those who had previously undertaken training with regards to depression in relation to an earlier research study (n = 12)[21] and the clinical lead for the service (author RB) were excluded. All LVSW practitioners attended the training programme. Twelve were invited for a qualitative interview, while the remaining 168 were invited to complete the questionnaire. In the 6 months prior to and post-training, 161 and 162 practitioners performed at least one LVSW assessment, respectively. Of these, 148 performed at least one LVSW assessment in the 6 months prior to and post-training programme. This is illustrated in *Figure 4*.

Questionnaires

Forty participants completed the questionnaire at all three time points. The demographic and employment characteristics of practitioners are presented in *Table 2*.

Qualitative interviews

Twelve practitioners were approached to complete a 6 months post-training interview. Of these, three were unable to attend. Reasons for non-attendance were maternity leave (n = 1) and being unable to schedule an interview within the data collection period (n = 2). The characteristics of the 9 who completed the interview was as follows; 5 were male and 4 female, 7 were optometrists or ophthalmic medical practitioners and 2 were dispensing opticians. They had been accredited as a LVSW practitioner for between 1–12 years. The range of patients seen each month was 1-60 and the average time spent with LVSW patients was reported as 31-40 min (n = 1), 41-50 min (n = 3) and 51-60 min (n = 5).

Recording the risk of depression

In the 6-month period prior to training, 29 of 162 (17.9%) practitioners recorded at least one patient attending their services as being at risk of depression. This increased to 70 of 161 (43.5%) in the 6-month period post-training (Pearson χ^2 = 24.852, $p < 0.0001$). Of the 148 practitioners who completed assessments pre- and post-training, 28 (18.9%) documented risk of depression in their patients pre-training, which increased substantially to 65 (43.9%) 6-months post-training (McNemar χ^2 = 24.453, asymptotic $p < 0.0001$).

In the 6 months prior to training, a total of 3569 patients were seen; of these 118 (3.3%) were identified as at risk of depression. In the 6 months following the training, a total of 4209 patients were seen. Of these, 239 (5.7%) were identified at risk of depression, representing a significant increase in the numbers of patients identified as being at risk of depression following the training programme (Pearson χ^2 = 24.815, $p < 0.0001$).

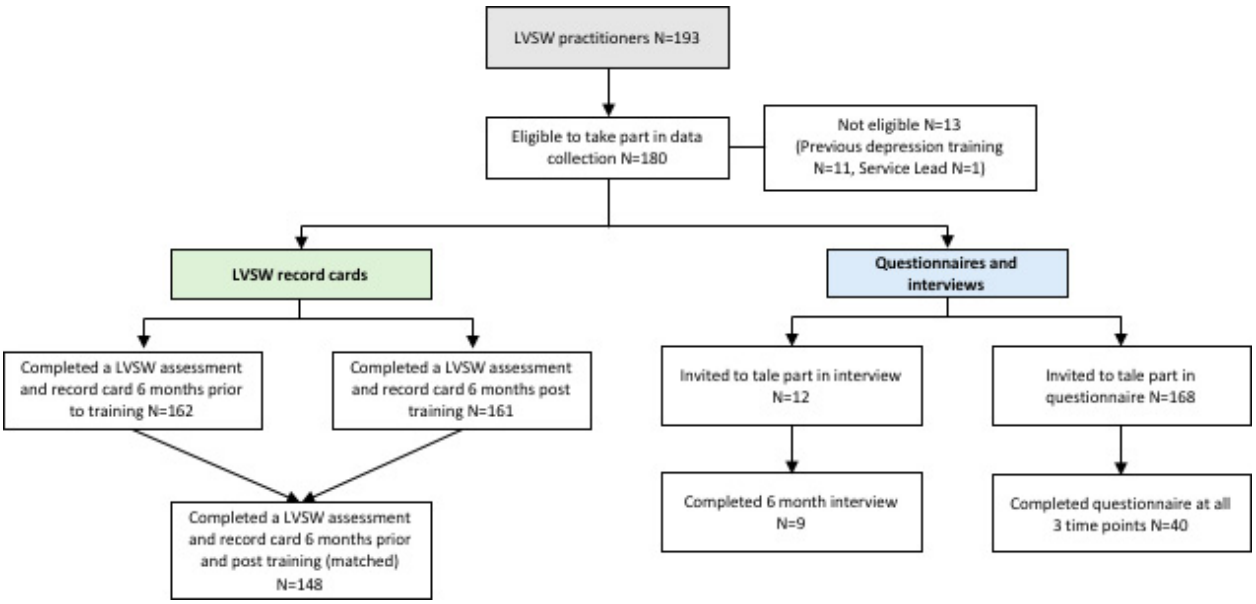

Figure 4. Overview of Low Vision Service Wales (LVSW) practitioners who participated in qualitative (interview) and quantitative (questionnaires and LVSW record cards) elements of the study.

Table 2. Summary of the demographic and employment characteristics of participants who completed the questionnaire at pre-training, post-training and follow-up

Characteristic	*N* = 40
Median age (years), (IQR)	46.5 (38.5–52.0)
Gender, *n* (%)	
Male	14 (35.0)
Female	26 (65.0)
Professional Background, *n* (%)	
Optometrist or Ophthalmic medical practitioner	37 (92.5)
Dispensing optician	3 (7.5)
Primary Place of Work, *n* (%)	
Independent practice working with others	18 (45.0)
Independent practice working on own	17 (42.5)
Multiple practice working with others	3 (7.5)
Multiple practice working on own	1 (2.5)
Other	1 (2.5)
Type of Assessments, *n* (%)	
Practice based	21 (52.5)
Domiciliary	1 (2.5)
A mixture of both	18 (45.0)
Median time since professional registration (years) (IQR)	21.0 (16.5–29.0)
Median time employed in eye care services (years) (IQR)	22.5 (17.0–30.0)
Median time employed as LVSW practitioner (years) (IQR)	10.0 (6.5–12.0)
Median number of people with low vision seen each month (IQR)	5.0 (4.0–12.0)
Average time spent with patient with low vision (mins) *n* (%)	
Less than 10	0 (0.0)
11–20	0 (0.0)
21–30	3 (7.5)
31–40	9 (22.5)
41–50	16 (40.0)
51–60	10 (25.0)
More than 60	2 (5.0)
Previous training on depression, *n* (%)	
Yes	1 (2.5)
No	39 (97.5)

Some of those interviewed reported an increase in documenting depression on the record card. Two practitioners only became aware of the tick box to indicate 'risk of depression' during the training, and hence, started to use it.

"...it's helpful that there's a box on the low vision form now...I can't remember how many times, but I have ticked it definitely more than once since the training..." P08

Another practitioner viewed the tick box differently following training and now uses it to indicate future risk as well as current possible depression, and to prompt follow up discussion at the next appointment if the patient seemed reluctant to discuss depression.

"...what I do now is I tick the box and then I cover it next time, if you like. Just to see if we can get a little bit further you know, on that conversation, than what we may have done this time "P03

Mixed method outcome

Confirmation. Both datasets demonstrated an increase in the use of the record card to document risk of depression.

Practitioner confidence

Analysis of confidence as gathered from the questionnaire at pre-, post- and 6 months after training was performed, based on the responses of 40 participants who completed the questionnaire at all three time points.

The practitioners' total scores on the confidence in working with people with depression scale increased significantly over time, indicating a significant increase in confidence post-training (*Table 3*).

Prior to the training, the participants were most confident in 'listening to patients talk about mood,' and least confident in 'providing education on treatment strategies'. The downward shift of items on the post-training and follow up item maps (*Figures 5a*, *b*, *c*, respectively), relative to pre-training outcomes indicates an increase in confidence overall in addressing depression. At post-training and follow up, participants remained the most confident in 'listening to patients talk about mood,' and were least confident in 'identifying depression versus dissatisfaction' and 'discussing concerns with family members,' respectively. An overall increase in confidence post-training compared to

Table 3. Mean total scores for confidence scale and outcomes from linear regression to determine difference in score over time

				Linear regression		
Scale	**Time point**	**Mean**	**S.D.**	**Difference in means**	**95% CI**	***p*-value**
Confidence	Pre	−1.73	3.32	Reference category		
	Post	0.59	2.94	2.32	1.47 to 3.17	<0.001
	Follow-up	0.87	3.15	2.59	1.74 to 3.44	<0.001

Log likelihood = −284.48; Wald $\chi^2 = 43.09$, $p < 0.001$.
A higher score indicates greater confidence. CI, confidence interval.

pre-training is evident, with an increase in upward spread of participants (*Figure 5*).

Following the training programme, most of the practitioners interviewed felt more confident to 'broach the topic' of depression.

> "...basically just broaching the subject, you know, I'm more comfortable um, having the discussion...how do you feel...the reduction or loss of vision has impacted on your mood..... "P03

A new awareness of the high prevalence of depression, and recognition that screening is part of the service guidance, means practitioners feel more justified and less 'nosey' in asking about depression, and for some, it is also considered normalised within the service.

> "...even if they questioned it, you know, we've got sort of figures ... statistics to sort of say that...this is really important.....so you can have that kind of conversation with them as well, if they start questioning you on what you're up to. "P03

> "I felt that because a lot of other people were asking similar questions, I was much less inhibited about asking it and didn't think that it would be inappropriate anymore.....I feel that it's become normalised to talk about it. "P08

Importantly for some practitioners, the training imparted the knowledge needed to confidently identify and address suspected depression.

> "I think it (the training program) was a really good basis for how we need to integrate it into our practice, um, and I feel confident now in screening and dealing with... talking about it with patients "P12

Finding that patients did not react negatively to being asked about their mental health also gave practitioners the confidence to continue having discussions, and one also found it rewarding to 'help a little bit more' P11.

However, some practitioners still did not feel confident as to how to progress a general conversation about feelings about possible depression, discussing a GP referral or

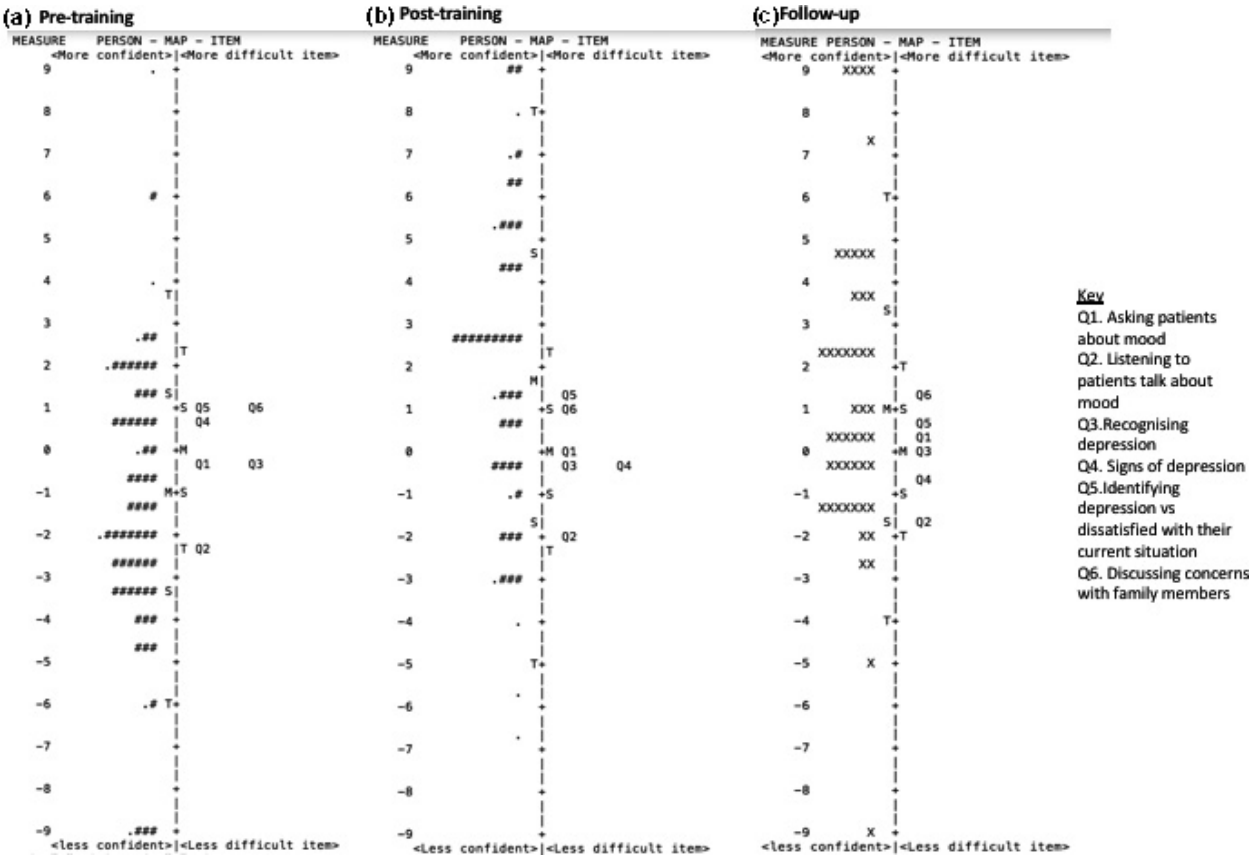

Figure 5. Item maps for: (a) pre-training, (b) post-training and (c) follow up questionnaire responses relating to confidence. Items from the questionnaire are shown on the right-hand side of each figure, relative to participants' level of ability (i.e., confidence in screening for depression in their patients) as shown on the left-hand side. The 'X/#' indicate 2 participants and the '.', 1 participant. The 'measure scale' on the left of each figure indicates confidence. More positive scores indicate more confidence, and more negative scores indicate less confidence.

knowing how much to intervene. Whilst two felt that the protocols removed the need for such decision making, for others, having conversations about support felt awkward and could lead to difficulty in gaining consent for a GP referral.

> "How do you go from the beginning of the conversation, which is kind of a little bit open ended and sort of just talking about mood? To right, you've got depression, I think you need to go your GP, I think it'd be best if I refer you, you know. Because they're two quite different conversations aren't they, you know? "P03

> "I have asked them, and often, they're sort of dismissed, oh no, I'm fine. When you know probably that they're not. But where do you go, if you get that sort of answer? Or should we go anywhere, or should we just leave it? "P05

Three practitioners expressed a continued lack of confidence to address depression at all, which was viewed as being too far outside of their usual role. These individuals were apprehensive about 'what they [the patient] might come back with' (P06), fearing disclosure of suicidal feelings or overwhelming personal difficulties, which they would not be equipped to handle. Feeling unqualified in the area of mental health, a fear of causing harm to the patient was reported.

> "Because we'd no medical knowledge, we'd no psychiatric knowledge, and are we sure the patient's depressed, or are they just a little bit down this particular day?... we could make matters worse for the patient. "P05

Mixed method outcome

Expansion. The two datasets confirmed a general increase in confidence following the training, particularly in discussing depression with the patient. The interviews added an insight into areas in which confidence was still lacking.

Programme evaluation

The descriptive results for the programme evaluation are based on the responses of the 129 participants who completed the post-training questionnaire.

Over 85% of participants agreed that the training programme was of the appropriate length and duration, the information provided was of the right standard, the programme was well-taught and allowed enough time for discussion (*Table 4*).

Table 4. Participant feedback of the training programme from 129 participants who completed the immediate post-training questionnaire

	Total *N* = 129	
Feedback	***n***	**%**
The duration of the online lecture was		
Too long	9	7.0
Just right	116	89.9
Too short	4	3.1
The duration of the contact day was		
Too long	5	3.9
Just right	113	87.6
Too short	11	8.5
The information presented in both of the above sessions was		
Too basic	10	7.8
Just right	118	91.5
Too advanced	1	0.8
The programme was well taught		
Strongly disagree	3	2.3
Disagree	3	2.3
Agree	65	50.4
Strongly agree	58	45.0
The training allowed enough discussion		
Strongly disagree	3	2.3
Disagree	9	7.0
Agree	55	42.6
Strongly agree	62	48.1
The information taught was appropriate to my work role		
Strongly disagree	2	1.6
Disagree	1	0.8
Agree	69	53.5
Strongly agree	57	44.2
The training made the signs and symptoms of depression clear		
Strongly disagree	2	1.6
Disagree	6	4.7
Agree	65	50.4
Strongly agree	56	43.4
I feel more confident to bring up emotional issues with patients		
Strongly disagree	3	2.3
Disagree	7	5.4
Agree	69	53.5
Strongly agree	50	38.8
I know where and to whom I can refer patients who I suspect have depression		
Strongly disagree	2	1.6
Disagree	1	0.8
Agree	67	51.9
Strongly agree	59	45.7
I feel my patients will benefit from what I have learnt in this programme		
Strongly disagree	2	1.6
Disagree	3	2.3
Agree	60	46.5
Strongly agree	64	49.6
I would recommend this training to others		
Strongly disagree	2	1.6
Disagree	3	2.3
Agree	57	44.2

(continued)

Table 4. (continued)

Feedback	Total *N* = 129	
	n	%
Strongly agree	67	51.9
The training materials provided were useful		
Strongly disagree	2	1.6
Disagree	5	3.9
Agree	68	52.7
Strongly agree	54	41.9
Do you intend to use the two recommended NICE questions to identify depression?		
No	0	0.0
Yes	119	92.2
Unsure	10	7.8

NICE, National Institutes of Health and Care Excellence.

Ninety one percent of participants considered the information learned was appropriate to their job role, and 92% reported feeling more confident to approach emotional issues with patients. Ninety two percent of participants reported that they intended to use the Whooley questions to identify depression following the training programme.

Practitioners generally viewed the training programme as relevant to their work and helpful in demonstrating how to integrate depression management into their practice.

> "I think the trainings made it so that it's actually not that much work. It's not hard it's not, erm, it's not pushy or anything like that. It's quite well done, yeah. "P07

The face-to-face training was generally considered more engaging and effective than the online lecture, and some appreciated the relaxed atmosphere created by the trainers, which facilitated open discussion about depression. The group discussion with colleagues was considered the most useful element, allowing practitioners to learn from each other's experiences.

> "Well certainly, the face-to-face training was more effective, I think, and really good to have. . .group discussions. . .And being able to hear other people's experiences of what they do if they're faced with a patient that they suspect to be suffering from depression. "P11

There were mixed feelings about the inclusion of a suicidal patient case scenario. Some considered that it was helpful to discuss the protocol for such cases, with others feeling intimidated that such a scenario might be encountered. Some suggested the training would be improved with a GP or psychiatrist present at the face-to-face session to provide an 'expert' opinion and information such as an exemplar referral letter and examples of treatment options. Some also expressed a desire for training that is more detailed or follow up training/coaching (possibly by telephone), to enable discussion of any obstacles encountered, given their lack of experience in this area.

> So I thought the training itself was good and worthwhile. . .. this general topic is something that we definitely need to be exploring as practitioners. I think where it falls down, like with most training, is the coaching and support afterwards. There isn't any, basically. . . I feel that we're a bit out on a limb. P03

Mixed methods outcome

Expansion. The two datasets confirmed the training was generally viewed as well delivered and useful to clinical practice. The qualitative responses expanded on where training could be improved or added to.

Discussion

Implementation of the depression training programme described in this study resulted in a significant change in both in the number of practitioners identifying a risk of depression in their patients with low vision, and the number of patients identified at risk of depression. This is the first study to find an actual change in behaviour and practice rather than only self-reported intention to change.

It is possible that the increase in patients identified at risk of depression was a result of a true increase in the incidence of the condition, rather than due to increased identification. However, the pre-post analysis was matched for time of year, minimising the seasonal impact on prevalence, and there were no other obvious causative factors.

A significant increase in self-reported LVSW practitioner confidence in the identification and management of depression was also reported immediately following training, which had increased further at 6 months post-training. This supports the findings of other studies that reported a change in the confidence of eye care professionals in the identification of depression following training.[32,37]

Previous work has indicated that a lack of practitioner confidence was a key barrier to screening for depression within the low vision setting,[24,46] with those who reported being more confident being more likely to implement screening.[29] These finding are supported in wider literature by Sinnema *et al.*[47] who reported that GPs who were less confident in their ability to identify depression were less likely to do so. As such, they recommend that working to increase GPs' confidence in the identification of depression would improve quality of care. In line with these findings, it is likely that the increase in confidence post training is a causative factor in the increase in the number of

practitioners identifying depression in the 6 months following training.

Our evaluation indicates that overall the training was well received by participants. Despite some reservations regarding the use of a suicide case as an example within the training content, the majority of participants reported that the content was relevant to their job role, and 93% reported that they intended to use the Whooley questions recommended by NICE to screen for depression in the future. However, despite this reported intent, and a statistically significantly increase in the number of practitioners identifying depression, o

nly 43.9% of practitioners identified a risk of depression in their patients in the 6 months following the training. It would be useful to determine whether practitioners not indicating a risk of depression are not asking the questions, or, are asking them but patients' responses do not indicate a risk.

It is not surprising, therefore, that the number of patients identified as being at risk of depression 6 months post-training (5.7%) falls someway below the published prevalence figures of depression in this population of 39%.[21] We can postulate that the factors influencing change of practitioner behaviour in terms of screening for depression in an eye care service may be complex. These are outlined in detail by Nollett *et al.*,[48] in which a perceived reluctance of patients to discuss depression was found. Furthermore, despite the reported increase in practitioner confidence, it should be acknowledged that previous studies have found a poor relationship between self-reported confidence and competence in performing clinical tasks.[49–51] Although the majority of the studies in this area are based on undergraduate education level, research suggests that confidence related poorly to competence even in more experienced practitioners.[52] Our study offers no measure of competency as a result of the training programme, future evaluation of which may offer further insight into the relationship between confidence and clinical practice and the impact on the number of patients identified with symptoms of depression.

The choice of the screening tool used may also have an influence on the rates of identification of depression risk. Previous work reports on the prevalence of symptoms of depression in individuals with low vision in this population using the Geriatric Depression Scale-15.[21] However, the use of the Whooley questions, as implemented by the LVSW, is supported due to their ease of application and validity,[53,54] and acceptability by those with low vision.[55] However, their use has resulted in under-identification of depression in some settings,[56,57] and it is important to note that they have not yet been validated for use within the primary eye care setting. Such a validation could include comparison of patient screening scores to formal recognition by an appropriate professional.

The underlying assumption is that continuing education training improves healthcare practice and, thereby, health outcomes for patients. However, the process of changing behaviour is a complex one. The Kirkpatrick model provides a four level framework for training evaluation, with each level having an impact on the next: level 1- perceptions to the training programme, level 2- acquiring knowledge, level 3- the transfer of skills and knowledge to the workplace and level 4- the impact of new knowledge on outcomes.[58] While we have shown that the intervention had an impact up to level 3, with a change in practitioner behaviour, further work is needed to examine the resultant impact on patient care (Kirkpatrick level 4). Furthermore, while educational intervention may facilitate changing practitioner behaviour, a number of alternative theories may be considered. For example, the concept of 'Nudge' has been described as the 'influencing of people's behaviours through indirect suggestions and positive reinforcement of behaviour'.[59] An application would be the inclusion of the Whooley questions on the LVSW record card and the positive reinforcement that practitioners may receive over time should positive outcomes result from the identification of depression in LVSW patients. Such practice has been shown to improve delivery of healthcare in other settings.[60]

The training programme described in this study combined didactic (online lecture) and discussion workshop delivery methods. The combination of these methods is considered to have the greatest effect on practitioner behaviour as compared to either method alone.[61,62] Furthermore, training which is interactive, uses multiple methods and is delivered to small groups, reflective of the training programme described, have been shown to be effective methods of educational delivery in other areas of medical education.[63,64]

The qualitative aspect of this study provided insight into the identification of possible improvements that could be made to the training programme such as delivery by a psychiatrist or GP. It also highlighted the desire for ongoing support by the practitioners, which could be provided through peer discussion or mentoring schemes. Ongoing intervention over time is linked to a positive effect of education,[63] suggesting that new behaviours may need reinforcement for sustainability. One way to achieve this may be the introduction of training regarding depression at the professional school level, which could be reinforced through subsequent postgraduate continued educational training.

Furthermore, to improve outcomes for patients, there is not only a need to identify and refer patients with symptoms of depression, but accessible services should be available to address the patient's needs in a timely manner.

Strengths and limitations

The strengths of this study include the use of routine clinical data to provide a measure of true change in practice. The mixed methods approach allowed exploration of confidence and training evaluation beyond the scope of a quantitative approach alone.

Limitations include the modest numbers of participants that completed the online questionnaire at all three time points, the modest number of qualitative participants, and the lack of measurable patient outcomes following positive screening for depression. Furthermore, it should be noted that due to the mandatory nature of the training, the use of a control group was not possible. Given that a randomised controlled trial (RCT) was not logistically possible in the context of this study, the results can be used to design a future RCT.

Conclusion

A training programme that is feasible in terms of time and resources and acceptable to practitioners was shown to increase practitioner confidence in the identification of depression. Additionally, the programme changed behaviour, resulting in an increase in the identification of depression in patients with low vision. The training represents an effective means of improving patient care, and an ongoing support framework for practitioners who are delivering screening should be developed. However, this is a complex topic and ongoing development is required to embed depression screening as an integral part of low vision services.

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Conflict of interest

RB is the clinical lead for the Low Vision Service Wales (LVSW) and was responsible for the design of the training programme. Otherwise, the authors report no conflicts of interest and have no proprietary interest in any of the materials mentioned in this article.

Author contributions

Rebecca Lynne Bartlett: Conceptualization (equal); Formal analysis (equal); Funding acquisition (equal); Investigation (equal); Resources (lead); Visualization (lead); Writing-original draft (lead). **Jennifer H Acton:** Conceptualization (equal); Supervision (equal); Writing-review & editing (equal). **Barbara Ryan:** Conceptualization (equal); Supervision (equal); Writing-review & editing (equal). **Ryan Man:** Formal analysis (equal); Writing-review & editing (equal). **Tim Pickles:** Formal analysis (equal); Writing-review & editing (supporting). **Claire Nollett:** Conceptualization (equal); Formal analysis (equal); Funding acquisition (equal); Investigation (equal); Methodology (lead); Project administration (lead); Resources (equal); Supervision (equal); Writing-original draft (supporting); Writing-review & editing (equal).

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Supporting Information

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Supplementary Material