International Journal of Audiology

ISSN: 1499-2027 (Print) 1708-8186 (Online) Journal homepage: www.tandfonline.com/journals/iija20

Validating the Client Oriented Scale of Improvement for Dizziness and Imbalance (COSIDI)

Petroc Sumner, Sally Mora , Hannah Derry , Harriet Withey , Deepak Rajenderkumar & Georgina Powell

To cite this article: Petroc Sumner, Sally Mora , Hannah Derry , Harriet Withey , Deepak Rajenderkumar & Georgina Powell (21 Nov 2025): Validating the Client Oriented Scale of Improvement for Dizziness and Imbalance (COSIDI), International Journal of Audiology, DOI: 10.1080/14992027.2025.2590151

To link to this article: https://doi.org/10.1080/14992027.2025.2590151

INTERNATIONAL JOURNAL OF AUDIOLOGY
https://doi.org/10.1080/14992027.2025.2590151

TECHNICAL REPORT

OPEN ACCESS Check for updates

Validating the Client Oriented Scale of Improvement for Dizziness and Imbalance (COSIDI)

Petroc Sumner[a], Sally Mora[b], Hannah Derry[c], Harriet Withey[d], Deepak Rajenderkumar[c] and Georgina Powell[a]

[a]School of Psychology, Cardiff University, Cardiff, UK; [b]Audiology, Swansea Bay University Health Board, Port Talbot, UK; [c]Audiology, Cardiff and Vale University Health Board, Cardiff, UK; [d]Audiology, University Hospital Southampton NHS Foundation Trust, Southampton, UK

ABSTRACT

Objective: Measuring vestibular rehabilitation progress with questionnaires can be difficult in time-limited clinical settings. We developed and tested a new brief tool: *Client Oriented Scale of Improvement for Dizziness and Imbalance* (COSIDI), based on validated client-oriented scales for hearing aids (COSI) and for tinnitus (COSIT), and on wider evidence for involving patients in specifying the goals for rehabilitation.

Design: We developed the COSIDI with patient and clinician feedback and validated it through comparison with Dizziness Handicap Inventory (DHI) and Vestibular Rehabilitation Benefit Questionnaire (VRBQ) during normal clinical appointments.

Study Sample: 91 outpatients in three clinical settings in Cardiff, Swansea and Southampton.

Results: COSIDI improvement scores showed comparable effect size with DHI and VRBQ (Cohen's $d = 1.1$ vs 1.2 and 0.64) and correlated highly with the existing measures ($r = 0.73$). Clinicians found COSIDI to be useful and appropriate for rehabilitation measurement, due to its patient-focus, brevity and support for goal-setting.

Conclusions: COSIDI is a valid tool for assessing vestibular rehabilitation, used alone or as complementary to other tools, which clinicians indicated provide useful prompts for patients to consider.

ARTICLE HISTORY
Received 23 June 2025
Revised 13 October 2025
Accepted 9 November 2025

KEYWORDS
COSI; vestibular rehabilitation; dizziness questionnaire; goal-setting; dizziness outcome measure

Introduction

Vestibular rehabilitation is an effective treatment for many vestibular disorders, but rehabilitation progress is not straightforward to assess; symptom experiences are heterogeneous and for many conditions, severity is not directly reflected by objective measures of vestibular function (e.g. Strupp et al. 2020). Symptom questionnaires are therefore necessary for rehabilitation assessment. However, ever increasing pressures on clinic time dues to long waiting lists and staff shortages in many countries (Amigoni, Lega, and Maggioni 2024; McIntyre and Chow 2020), mean that rehabilitation progress must be assessed as efficiently as possible, while remaining sensitive to individual patient needs. Here we asked: is it possible to reduce the length of standard dizziness questionnaires while retaining an equivalent assessment?

Beyond questionnaire length in time-critical clinical practice, different questions are more or less relevant for each patient (Dillon, James, and Ginis 1997) An alternative to having a set list of questions is to allow patients to set their own priorities for assessing symptom improvement. Involving patients in specifying rehabilitation goals, and key abilities or situations for which to assess improvement, has long been recognised as motivating for the rehabilitation process (e.g. (McKenna 1987; Wade 2009; Kang et al. 2022). In audiology, this approach has been adopted for measuring hearing aid benefit and satisfaction by the *client oriented scale of improvement* (COSI), in which patients nominate up to five listening situations in which help with hearing is required (Dillon, James, and Ginis 1997). Following the success of COSI, a similar approach was taken for tinnitus (COSIT; Searchfield 2019).

Here we assess the validity and clinical utility of an equivalent tool for dizziness and imbalance (COSIDI; Figure 1), closely modelled on COSI and COSIT following proven principles of patient-oriented

CONTACT Petroc Sumner sumnerp@cardiff.ac.uk School of Psychology, Cardiff University, Cardiff, UK.

Supplemental data for this article can be accessed online at https://doi.org/10.1080/14992027.2025.2590151.

Situations that are problematic for me / affect my daily function	Initial severity (date recorded: 29/2/24)					Severity after rehabilitation (date recorded: 30/4/24)				
	My dizziness or imbalance is problematic in this situation… *(tick one answer)*					My dizziness or imbalance is problematic in this situation… *(tick one answer)*				
	Never or Hardly Ever	Occasion-ally	Half the Time	Most of the Time	Always or Almost Always	Never or Hardly Ever	Occasion-ally	Half the Time	Most of the Time	Always or Almost Always
Getting in/out of bed/car/sofa					✓				✓	
Supermarket or Large store				✓				✓		
Socially Coffee shop				✓				✓		
Patterned floors					✓				✓	
Shower				✓	✓		✓			

Figure 1. An example COSIDI form used in the study. The instructions attached to the table were: *Please list up to five situations that you find challenging due to your dizziness or imbalance (or related reasons, for example, due to anxiety associated with your dizziness). It is best to provide examples that you encounter frequently (for example getting up from a chair, or going to the supermarket), so that you will know if they have improved when you have your follow-up appointment.* Patients often provided fewer than 5 examples (see results). A slightly improved form, following feedback, is available in Supplementary material S1.

measurement in a format already familiar for many audiologists. Before vestibular rehabilitation begins, the patient lists up to 5 common situations that trigger their dizziness (e.g. getting up from a chair, shopping) and symptoms are rated before rehabilitation and again at a follow-up appointment. Given that COSIDI aims to enable straightforward outcome assessment during busy clinical appointments, we aimed to validate COSIDI during routine NHS outpatient practice with the full variety of diagnoses and follow-up durations that this entails.

Methods

Tool development

COSI and COSIT ask patients to rate both improvement and current ability. We adopted the latter approach since *COSI ability* showed higher reliability than *COSI improvement* (Dillon, James, and Ginis 1997).

The wording and arrangement of COSIDI was then developed through two rounds of iterative consultation with practicing clinicians (audiologists and physiotherapists) and a volunteer patient advisory group in South Wales ($N = 6$ with range of vestibular conditions), following UK standards for public involvement in research. Different versions of COSIDI were produced, reflecting implementation differences existing in COSI, COSIT and other goal-directed rehabilitation approaches: One version was phrased to ask for difficulties, where a higher score meant stronger symptoms; another version asked for goals, where higher scores meant rehabilitation progress towards goal. Members of the advisory group were consulted in semi-structured interviews about the clarity, intuitiveness and ease of use for these different aspects of the design (with the option a phone call or providing written comments for inclusivity).

Feedback indicated general support for the approach and a preference for higher scores meaning worse symptoms, resulting in the COSIDI tool presented in Figure 1. See Supplementary material S2 for further details.

Tool validation

Participants

91 patients consented and completed an initial COSIDI (age mean 58, SD 14, range 24 to 89; 64 Female, 20 male, 7 not stated), recruited through three outpatient clinics in Swansea Bay University Health Board ($N = 24$), Cardiff and Vale University Health Board ($N = 40$) and University Hospital Southampton NHS Foundation Trust ($N = 27$). Patients were eligible for

recruitment if they were to be seen for vestibular rehabilitation with a follow-up appointment, were over 18, and judged to have capacity and sufficient understanding of English to provide informed consent.

Patients had a range of diagnosed presentations, including peripheral vestibular hypofunction or paresis, suspected neuritis or labyrinthitis ($N = 46$); BPPV ($N = 17$); PPPD, functional neurological disorder or other central chronic conditions ($N = 15$), vestibular migraine ($N = 9$, often in addition to other diagnoses), Meniere's Disease ($N = 4$), vestibular schwannoma ($N = 4$), and Ramsay Hunt syndrome ($N = 1$).

All aspects of the study had NHS ethical approval (IRAS number 328977).

Materials

The COSIDI design chosen by the advisory group and used in the study is shown in Figure 1. Participants or their clinician filled in the left-hand section during their first appointment, and the second half in their first follow-up appointment (most patients only have one follow-up). Each situation is scored from zero (never or hardly ever) to 4 (always or almost always). For simplicity item scores were simply added to produce a total score, even though some patients provide fewer examples than others (taking an average made no practical difference to results, see Supplementary information S5). The main purpose of a rehabilitation measurement is to assess progress within individual patients, but for comparisons across patients, the raw summed scores can be converted to relative improvement (see analysis section).

The COSIDI was compared to existing questionnaires already in routine use in the participating clinical settings. In two of the clinics this was the Dizziness Handicap Inventory (DHI; (Jacobson and Newman 1990)) and in one clinic it was the Vestibular Rehabilitation Benefit Questionnaire (VRBQ) (Morris, Lutman, and Yardley 2009). The ethical context of the study, being performed in hard-pressed NHS clinics with long waiting lists, meant that there was no possibility to extend clinic time by adding measures that were not already part of clinical practice at those sites (other than COSIDI itself).

Procedure

The COSIDI was simply added to the usual clinical procedures at each site. No other change in practice or patient experience occurred for the purposes of this study. Patients or their clinician filled out the COSIDI form in their initial and first follow-up appointments in addition to the DHI or VRBQ. All other procedures were unchanged from standard clinical practice.

Follow up appointments were between 8 and 32 weeks following first appointment, following routine clinical scheduling: Cardiff mean = 18.3 weeks (SD = 8.8); Swansea, 13.5 (5.7); Southampton 13.1 (5.8). All first appointments and the majority of follow-ups were face to face, while a small minority of follow-ups were by telephone as per the routine clinical practice in each site. No additional assessment was possible for the purpose of test-retest reliability with short interval.

At the end of the study, all participating clinicians ($N = 13$) were invited to provide brief qualitative feedback, using an anonymous online questionnaire with the following prompts: *Did your patients fill COSIDI out themselves, or did you do it in discussion with them?; If patients filled it in themselves, did they understand the instructions and layout? Do you think COSIDI is a useful and efficient clinical tool?; Do you have any further comments (e.g. things you found worked well, things that are missing from COSIDI, or tips for how to use it)?*

Analysis

The main outcome assessments were comparison of effect sizes for capturing rehabilitation effects (initial to follow-up appointment) and correlation of COSIDI improvement with DHI and VRBQ improvement. For correlations, we calculated percentage improvement relative to the initial score (100*(initial-followup)/initial) as a simple way to place the DHI, VRBQ and COSIDI onto comparable scales from 0 to 100 (percentage improvement also has the advantages of calibrating for different use of the scale between patients, and being identical whether taking an average or sum over COSIDI items). Analysis was limited to patients for whom both COSIDI and DHI or VRBQ were completed at follow-up and at least two situations were provided for COSIDI. We also tested whether COSIDI correlated with the subscores of DHI (functional, emotional, physical) and VRBQ (Dizziness, Anxiety, Motion-Provoked Dizziness, and Quality of Life). Further analyses in response to clinician feedback are described in results. Qualitative responses were analysed using template thematic analysis following prompt topics with the epistemological approach of critical realism.

Results

Patient retention and descriptives

76 attended follow-up appointments, but 5 did not complete both questionnaires (due to time pressures

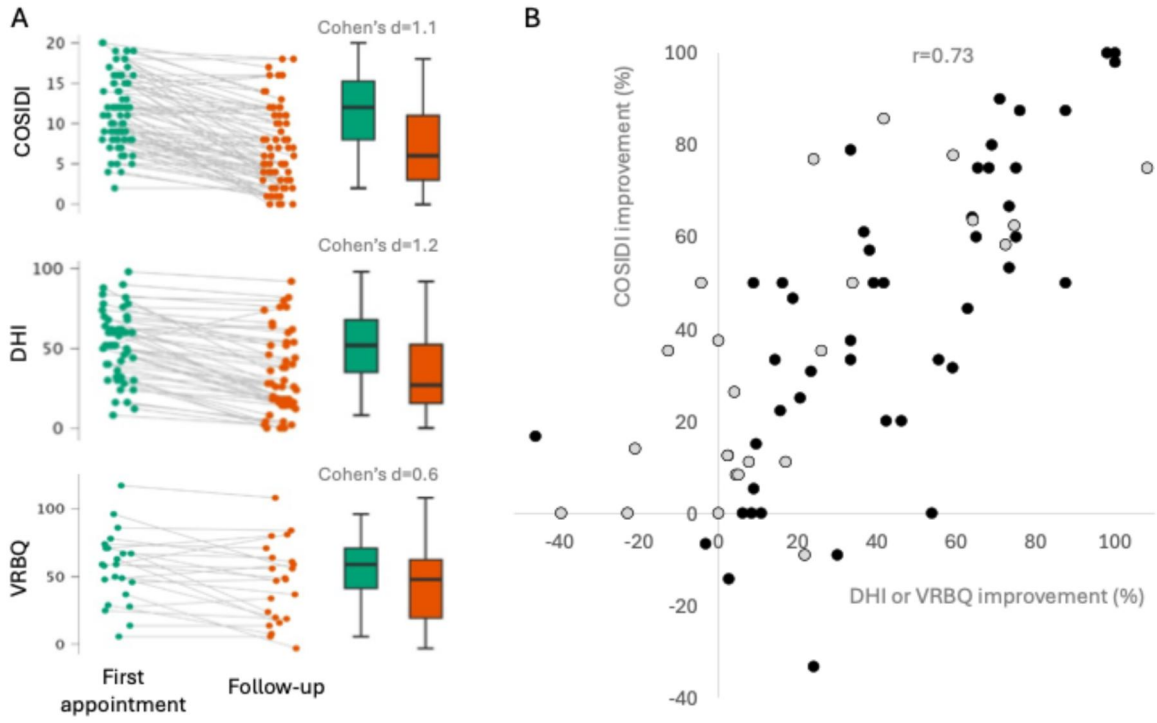

Figure 2. A. Initial and follow-up scores for COSIDI, DHI and VRBQ for each patient (Cohen's d represents effect size for the change; box plots provide median, interquartile range and range). B. Correlation between COSIDI improvement (%) and DHI improvement (black dots) or VBRQ improvement (grey dots). Positive values represent improvements – i.e. reductions in scores between clinical appointments. Negative values represent worsening scores.

or wellness). One patient provided only one situation, so their data was not analysed, leaving $N = 70$ for analysis (DHI 47, VRBQ 23, see Supplementary Table S3 for diagnoses and demographics). $N = 70$ is sufficient to detect correlation of $r = 0.29$ (alpha = 0.05 and 1-beta = 0.8), well below what we would consider acceptable convergent validity ($r > 0.5$).

The average number of COSIDI situations listed was 3.8, ranging from 2 to 5 (for analysed data), meaning nearly 350 situations listed in initial appointments and 250 rated again at follow-up (see Supplementary information S4).

Validation

The effect size for changes in COSIDI score between appointments was large (Cohen's $d = 1.13$), similar to the effect sizes of 1.24 for DHI and 0.60 for VRBQ (Figure 2A).

COSIDI showed good convergent validity. Figure 2B shows the correlation of COSIDI improvement with DHI and VRBQ improvement ($r = 0.73$, $p < 0.001$). Reassuringly, COSIDI improvement correlated well with both DHI and VRBQ independently (DHI, black dots: $r = 0.75$, $p < 0.001$; VRBQ, grey dots, $r = 0.72$, $p < 0.001$). For comparison, the convergent validity values reported for the DHI and VRBQ themselves range from $r = 0.27$ to .77 and those for COSI and COSIT range from $r = 0.27$ to 0.66 (Dillon, James, and Ginis 1997; Morris, Lutman, and Yardley 2009; Searchfield 2019).

COSIDI improvement correlated with improvement in all DHI subscores (physical, $r = 0.66$; emotional, $r = 0.61$; functional, $r = 0.60$) and with VRBQ subscores for Dizziness, Motion-Provoked Dizziness, and Quality of Life ($r = 0.40$, 0.41 and 0.49, respectively), but not anxiety ($r = 0.16$). For these six subscores that correlated with COSIDI, interestingly the correlation was consistently higher at follow-up appointments ($r = 0.79$, 0.76, 0.72 for DHI and 0.61, 0.65, 0.53 for VRBQ) than at first appointments ($r = 0.34$, 0.29, 0.43 for DHI and 0.35, 0.28, 0.27 for VRBQ).

A lower bound for test-retest reliability for COSIDI was estimated as $r = 0.64$ ($p < .001$) using initial and follow-up appointments; we would expect this value to be higher if two time points could have been measured without rehabilitation taking place in between. For reference, the test-retest reliability for COSI was 0.84 for two timepoints between which little improvement took place (Dillon, James, and Ginis 1997). Since observed correlations between measures are limited by reliability (Spearman 1904), the correlation of $r = 0.73$ between COSIDI and DHI/VRBQ implies that

Table 1. Themes and illustrative quotes arising from semi-structured clinician feedback. Further details are in Supplementary information S7.

Qualitative theme	N clinicians mention	Illustrative quotes
Patient-focus and efficiency	8	*Tailored to the patient's needs and avoids questioning them about things that are not relevant; ; quicker than the other questionnaire we have traditionally used, and is patient-centred rather than generic*
Perceived low sensitivity to small change	2	*It doesn't always capture improvement in symptoms as the situations and categorizations of symptoms are too broad*
Supports goal-setting	4	*I think it helps them to set a few so that they have multiple measures of success. The fact that we were doing the study made me set goals achievable in 8 weeks instead of longer-term goals which can be demoralising if the patient doesn't meet them.*
DHI or VRBQ questions provide useful prompts	2	*the VRBQ was more beneficial for some patients as it made them think of things they hadn't considered; sometimes the DHI may highlight a problem that the patient hasn't mentioned*
Suggestions for improvementq	2	*I do think the wording on the questionnaire could be simplified to make it more readable (e.g. My dizziness or imbalance makes this situation difficult …) ; Might be good to have a scoring system which make it easier to audit as an outcome measure.*

COSIDI has retest reliability >0.8 (see Supplementary information S6).

Qualitative clinician feedback

Nine survey responses were received (out of 13 clinicians who used COSIDI during the study). Response themes are presented in Table 1, with further quotes in Supplementary material S7. All reported that COSIDI was mostly or always filled out by the clinician in discussion with the patients during appointments, rather than by the patient themselves.

Analyses following feedback

To assess the concern that COSIDI may fail to capture some improvements, we analysed the number of patients where COSIDI showed no improvement when DHI or VRBQ did show an improvement, and compared this to the number when COSIDI showed an improvement while DHI/VRBQ questionnaire did not (COSIDI is not a diagnostic or categorisation tool, so we do not use ROC curves or assess categorisation success). It can be seen in the lower right quadrant of Figure 2B that there are 7 cases where COSIDI showed zero or negative change when DHI or VRBQ shows at least some positive improvement. For the symmetrically opposite case in the top left quadrant, there were five cases where COSIDI showed improvement where DHI or VRBQ showed a worsening or no change. A Chi square test found no difference between these rates (against the expected distribution if they were symmetrical, $X^2<1$, $p>0.8$). Therefore, we found no evidence that over the whole cohort COSIDI failed to capture improvements more commonly than DHI or VRBQ.

Discussion

No tool is perfect for assessing rehabilitation progress in the complex and heterogenous domain of vestibular and dizziness conditions. Given ever-increasing pressure on clinic time from waiting lists and staff shortages, it is essential that a clinical tool is pragmatic, efficient and intuitive for both patients and clinicians, as well as providing satisfactory convergent validity with other measures. The results of this study indicate that COSIDI fulfils these minimum criteria, although we could not optimally assess retest reliability (note that internal consistency cannot be assessed for a tool without items). The improvement effect size was similar or larger for COSIDI compared to the existing questionnaires. Although COSIDI is short (and some patients only provided 2 or 3 items), potentially making it noisy, it gains power in return by focussing on situations selected by the patients themselves, and thus avoids diluting the measurement with questions that are less relevant for some individuals. The correlation of COSIDI improvement with the existing questionnaires (convergent validity) was at least as good as the convergent correlations reported when those questionnaires were validated themselves, or when COSI and COSIT were validated (Dillon, James, and Ginis 1997; Morris, Lutman, and Yardley 2009; Searchfield 2019).

The majority of clinicians were positive about using COSIDI for its brevity and patient focus, but two clinicians voiced concern about its sensitivity for capturing small improvements. Indeed, there were seven cases where COSIDI showed no improvement, while DHI or VRBQ showed at least some improvement. These cases may have disproportionately fallen to the clinicians who reported the concern, but statistically, this scenario was no more likely than COSIDI

showing improvement when DHI or VRBQ did not. There was no particular pattern in the situations listed in these cases. We conclude that insensitivity may occur sometimes due to heterogeneity in recovery and self-report, but does not represent any systematic issue with capturing improvement with a small number of situations or the five point scale (given also that the effect size was equivalently large).

An important theme in the clinician survey was the beneficial use of relevant and achievable goals for individual patients, which echoes established principles of patient-guided goal setting in many types of rehabilitation (McKenna 1987; Wade 2009). Clinicians do not need a form like COSIDI to do this, but some clinicians reflected that COSIDI helped support them in this discussion with patients, and focussed the discussion on situations and goals relevant for the timescale of follow-up appointments (around 8 weeks). This was considered worth the time input as part of a establishing a customised vestibular rehabilitation regime or *Individual Management Plan* (Grenness et al. 2015).

On the other hand, clinicians also reflected that the range of explicit prompts contained in existing questionnaires like DHI and VRBQ are useful for patients to consider. Indeed, one clinician noted that *a couple of patients said that they could see the benefit of both questionnaires and felt they served different purposes*. Other questionnaires with similar items, such as the Vertigo Symptom Scale, VSS (Yardley et al. 1992)) or the Activities-specific Balance Confidence Scale. ABC (Whitney, Hudak, and Marchetti 1999) would also fulfil this function. Therefore, both styles of questionnaire have advantages, and whichever is used formally by clinics to audit or assess rehabilitation improvements, the other could be used as a complementary tool for prompts, or to support goal discussion.

Interestingly, the VRBQ anxiety subscore did not correlate with COSIDI, while all the other VRBQ and DHI subscores did (including the emotion subscore of DHI). In some previous research the anxiety subscore was insensitive to rehabilitation improvement (e.g. (Lilios et al. 2023), but this was not the case in our data. The anxiety subscore has three questions focussed on 'somatic anxiety' (Ree et al. 2008): *I get a feeling of tingling, prickling or numbness in my body; I feel as though my heart is pounding or fluttering; I have difficulty breathing or feel short of breath*. These are quite distinct from the emotional subscore of DHI, which assesses, for example, frustration, cognitive anxiety (worry) and depression related to balance problems. COSIDI focusses on functional situations that are problematic, and although anxiety is included in the instructions, the format primes patients to consider dizziness over anxiety. Patients occasionally listed worry about certain situations, but most did not. We speculate that these factors explain the low correlation with the VRBQ anxiety questions. Anxiety would require separate measurement if relevant (though it is reassuring that the correlation extends to the emotional subscore of DHI).

COSIDI is designed as a tool for measuring change within individuals, rather than for comparing across individuals at a single time point. We should therefore be cautious in interpreting the raw scores from initial or follow-up appointments. However, it is intriguing that correlations between COSIDI and the other questionnaires or subscores were consistently stronger at follow-up than at the first appointment (this replicated across the DHI and VRBQ, which were also different cohorts). Part of this difference may reflect slightly larger variance in scores at follow-up, where some patients had recovered, while others had not (narrower variance hampers correlation). However, the difference in variance was not large (perhaps due to attrition bias reducing variance), and cannot fully account for the different correlation strengths. We speculate that patients understand their symptoms better by the time of follow-up and they also have met the scales before, so they may provide more consistent answers across questionnaire types (reducing measurement error).

Limitations

The study was carried out as a minor addition to standard clinical practice. This meant that different patients did the DHI or VRBQ because we did not change the questionnaire already in use in each clinic. We used % improvement scores to normalise onto the same scale. This procedure could increases noise when initial scores are low, but given most initial scores were medium to high, The advantages of % improvement (calibrating for different use of the scale, and for different numbers of items) appeared to outweigh this disadvantage. Since COSIDI's convergent validity was replicated for DHI and VRBQ in separate patient samples, this aids generalisability.

The ethical context also meant we could not measure test-retest reliability over a short period where dizziness had not changed. Instead, we provide a lower bound, and also rely on the convergent validity correlations to show that COSIDI must be a reasonably reliable measure, or else correlations with other

measures would be limited, as explained in Supplementary information S6.

The natural clinical settings provided a wide range of diagnoses and follow-up times, which no doubt add variance to the rehabilitation improvement measured. Such variance could be problematic in a study of outcomes, but here we simply assess whether one questionnaire provides similar information to another, and therefore variance is needed, whatever its source. One effect of different follow-up times may have been to limit the effect-size for VRBQ, since average follow-up was shorter for this cohort.

Guidance for use

The COSIDI is available in Supplementary information S1 (with minor improvements to wording and scoring guide). The most important principle for use is to choose situations that will be encountered often enough for the patient to judge them again at follow-up. Clinicians and patients achieved this successfully in our study, with only 3 situations (out of 250) not able to be judged at follow-up.

Most clinicians needed to discuss the situations with patients during the appointment, and support them in choosing the most appropriate (e.g. one clinician reflected: *I think it does need to be done in discussion with patients in order to be used most effectively, especially as it is not in the format of questionnaire that most people will have seen before*).

Some clinicians reflected that questions in the DHI or VRBQ would be helpful prompts for the COSIDI as complementary tools. Likewise, COSIDI could be used complementarily with other questionnaires (e.g. VSS or ABC). If an assessment of somatic anxiety is required, such items would need to be explicitly prompted, or else a different tool would be needed.

To aid the rating of these situations, one clinician advised that *Goals need to be as specific as possible (i.e. standing washing up for 10 minutes vs. washing up) in order to be measurable.* Some COSIDI forms reflected this, with specific timescales listed for situations (e.g. *passenger in car for a few minutes; shopping in supermarket for 30 minutes),* while the majority did not (e.g. passenger in *car; supermarket).* The more specific approach is bound to help a patient calibrate their responses at follow-up, but our study shows that the briefer approach also provides validated rehabilitation measurement.

One of the advantages of COSIDI is that it provides a clear visual representation of change, both absolute and relative improvement. When a score is needed, we recommend a simple sum across situations to meet the ethos of efficiency in-clinic (percentage improvement is not needed unless comparing across questionnaires). Although patients may list between 1 and 5 situations, there was no clear advantage for using an average in our analysis (Supplementary information S5). This may be because the number of listed situations also reflects severity to some degree, if patients more readily think of more situations where they struggle.

Summary

COSIDI offers a simple patient-focussed method of visualising and measuring rehabilitation progress, correlating well with existing dizziness questionnaires. It mirrors the successful COSI and COSIT tools for hearing aids and tinnitus (Dillon, James, and Ginis 1997; Searchfield 2019). No questionnaire represents the ground truth of rehabilitation progress. COSIDI is limited but focussed on what affects individuals, while DHI and VRBQ are more comprehensive but may dilute measurement with questions less relevant to some patients. One approach recommended by clinicians in this study would be to use COSIDI as an efficient tool to support goal setting and to measure progress, while using DHI or VRBQ informally to provide prompts for patients to consider.

Author contributions

CRediT: **Petroc Sumner**: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Visualization, Writing – original draft, Writing – review & editing; **Sally Mora**: Conceptualization, Data curation, Investigation, Methodology, Project administration, Supervision, Writing – review & editing; **Hannah Derry**: Conceptualization, Investigation, Methodology, Project administration, Supervision, Writing – review & editing; **Harriet Withey**: Conceptualization, Investigation, Methodology, Project administration, Supervision, Writing – review & editing; **Deepak Rajenderkumar**: Conceptualization, Investigation, Methodology, Project administration, Supervision, Writing – review & editing; **Georgina Powell**: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision, Writing – review & editing.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

We would like to especially thank the clinicians who made this study possible by adding the COSIDI to their busy clinic loads: Bethan Finnegan, Lowenna Rule, Benjamin Morgan, Richard Perdue, Debra Kelshaw, Thomas Ellis, Diane Kane, Rosey Scott, Annabel Forsdyke, Lisa Garner and Lauren Summers. PS was funded by Wellcome grants [104943/Z/14/Z] and [097824/Z/11/Z] for part of this research. GP was funded by Health and Care Research Wales10.13039/100012068 [SCF-18-1504]. For the purpose of open access, the authors have applied a CC BY public copyright licence to any Author Accepted Manuscript version arising from this submission.

ORCID

Petroc Sumner http://orcid.org/0000-0002-0536-0510

References

Amigoni, F., F. Lega, and E. Maggioni. 2024. "Insights into How Universal, Tax-Funded, Single Payer Health Systems Manage Their Waiting Lists: A Review of the Literature." *Health Services Management Research* 37 (3): 160–173. https://doi.org/10.1177/09514848231186773.

Dillon, H., A. James, and J. Ginis. 1997. "Client Oriented Scale of Improvement (COSI) and Its Relationship to Several Other Measures of Benefit and Satisfaction Provided by Hearing Aids." *Journal of the American Academy of Audiology* 8 (1):27–43.

Grenness, C., L. Hickson, A. Laplante-Lévesque, C. Meyer, and B. Davidson. 2015. "The Nature of Communication throughout Diagnosis and Management Planning in Initial Audiologic Rehabilitation Consultations." *Journal of the American Academy of Audiology* 26 (1):36–50. https://doi.org/10.3766/jaaa.26.1.5.

Jacobson, G. P., and C. W. Newman. 1990. "The Development of the Dizziness Handicap Inventory." *Archives of Otolaryngology-Head & Neck Surgery* 116 (4):424–427. https://doi.org/10.1001/archotol.1990.01870040046011.

Kang, E., M. Y. Kim, K. L. Lipsey, and E. R. Foster. 2022. "Person-Centered Goal Setting: A Systematic Review of Intervention Components and Level of Active Engagement in Rehabilitation Goal-Setting Interventions." *Archives of Physical Medicine and Rehabilitation* 103 (1):121–130.e3. https://doi.org/10.1016/j.apmr.2021.06.025.

Lilios, A., T. Chimona, C. Papadakis, I. Chatziioanou, C. Nikitas, and C. Skoulakis. 2023. "Different Vestibular Rehabilitation Modalities in Unilateral Vestibular Hypofunction: A Prospective Study." *Otology & Neurotology: official Publication of the American Otological Society, American Neurotology Society [and] European Academy of Otology and Neurotology* 44 (4):e246–55–e255. https://doi.org/10.1097/MAO.0000000000003836.

McIntyre, D., and C. K. Chow. 2020. "Waiting Time as an Indicator for Health Services Under Strain: A Narrative Review." *Inquiry: a Journal of Medical Care Organization, Provision and Financing* 57 (January):46958020910305. https://doi.org/10.1177/0046958020910305.

McKenna, L. 1987. "Goal Planning in Audiological Rehabilitation." *British Journal of Audiology* 21 (1):5–11. https://doi.org/10.3109/03005368709077768.

Morris, A. E., M. E. Lutman, and L. Yardley. 2009. "Measuring Outcome from Vestibular Rehabilitation, Part II: Refinement and Validation of a New Self-Report Measure." *International Journal of Audiology* 48 (1):24–37. https://doi.org/10.1080/14992020802314905.

Ree, M. J., D. French, C. MacLeod, and V. Locke. 2008. "Distinguishing Cognitive and Somatic Dimensions of State and Trait Anxiety: Development and Validation of the State-Trait Inventory for Cognitive and Somatic Anxiety (STICSA)." *Behavioural and Cognitive Psychotherapy* 36 (3): 313–332. https://doi.org/10.1017/S1352465808004232.

Searchfield, G. D. 2019. "A Client Oriented Scale of Improvement in Tinnitus for Therapy Goal Planning and Assessing Outcomes." *Journal of the American Academy of Audiology* 30 (4):327–337. https://doi.org/10.3766/jaaa.17119.

Spearman, C. 1904. "The Proof and Measurement of Association between Two Things." *The American Journal of Psychology* 15 (1):72. https://doi.org/10.2307/1412159.

Strupp, M., J. Dlugaiczyk, B. B. Ertl-Wagner, D. Rujescu, M. Westhofen, and M. Dieterich. 2020. "Vestibular Disorders." *Deutsches Arzteblatt International* 117 (17): 300–310. https://doi.org/10.3238/arztebl.2020.0300.

Wade, D. T. 2009. "Goal Setting in Rehabilitation: An Overview of What, Why and How." *Clinical Rehabilitation* 23 (4):291–295. https://doi.org/10.1177/0269215509103551.

Whitney, S. L., M. T. Hudak, and G. F. Marchetti. 1999. "The Activities-Specific Balance Confidence Scale and the Dizziness Handicap Inventory: A Comparison." *Journal of Vestibular Research: equilibrium & Orientation* 9 (4): 253–259. https://doi.org/10.3233/VES-1999-9402.

Yardley, L., E. Masson, C. Verschuur, N. Haacke, and L. Luxon. 1992. "Symptoms, Anxiety and Handicap in Dizzy Patients: Development of the Vertigo Symptom Scale." *Journal of Psychosomatic Research* 36 (8):731–741. https://doi.org/10.1016/0022-3999(92)90131-K.