Questionnaire Screening for BPPV

for an adult direct referral balance clinic

Hanna Jeffery, Royal Glamorgan Hospital **Hanna.Jeffery@wales.nhs.uk**

GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol Cwm Taf Morgannwg University Health Board

Introduction

- Patients with uncomplicated BPPV do not require long appointments for balance assessment.
- Clinic time can be saved by identifying uncomplicated BPPV prior to booking and using shorter appointments.[1]
- Previous studies have shown success in identifying BPPV using subsets of questions from the Dizziness Handicap Inventory (DHI). [2,3]
- Pre-appointment screening offers the potential to stream patients into more efficient pathways.

Methods

- The questionnaire used in this study comprised the 10-item short-form DHI (S-DHI)[4] and five questions from the DHI that ask about BPPV symptoms.[2,3]
- The questionnaire was posted to 200 patients as part of a waiting list validation letter.
- Patients completed the questionnaire at home using either a paper form or an online form (QuestionPro.com).
- A prompt letter was sent if there was no response.
- The response rates are shown in figure 1.
- The questionnaires were scored the same as the DHI:

No=0; Sometimes=2; Yes=4

Figure 1: How Patients Responded (%)

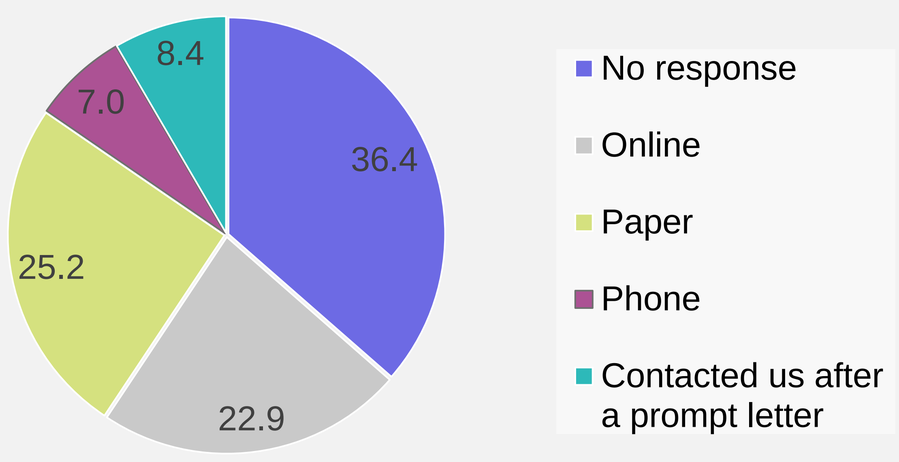
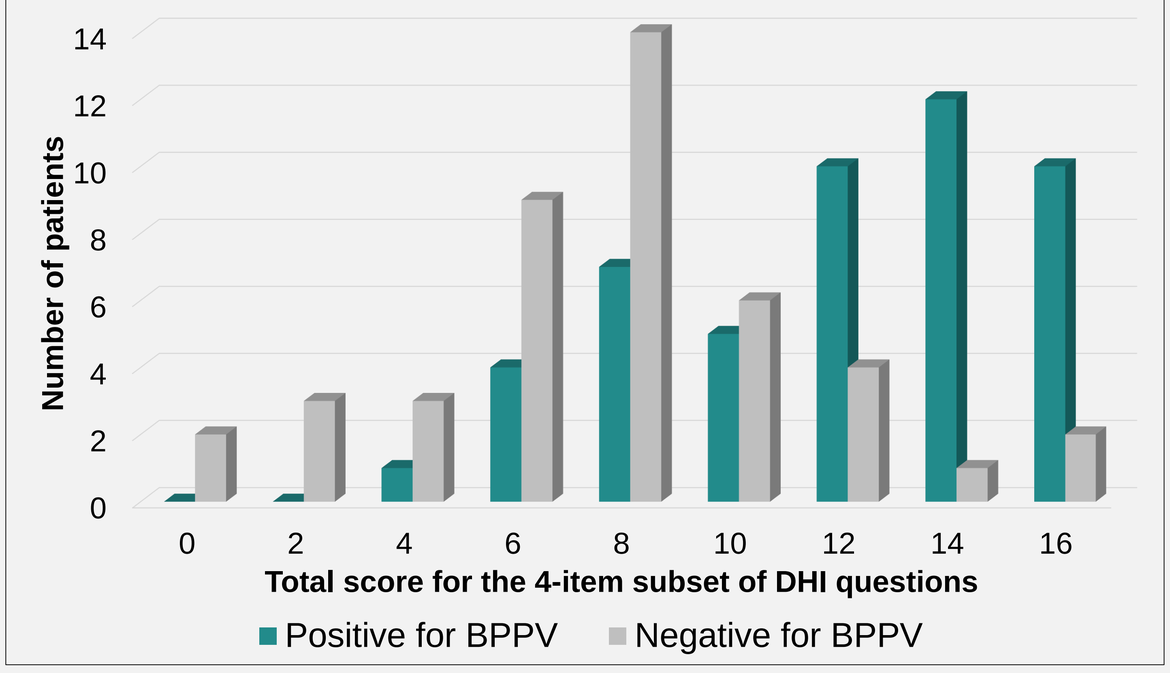


Figure 2: Scores for DHI BPPV Questions



BPPV Testing

- For patients who attended clinic, 61 patients tested positive for BPPV (31 with co-occurring conditions); 61 patients tested negative for BPPV.
- Questionnaire scores were compared between patients who tested positive for BPPV and negative for BPPV.
- **The scores on the BPPV questions were significantly different between BPPV and non-BPPV groups.**

(Chi-squared goodness of fit $p<0.05$, using a 4-item or 5-item subset.) The 4-item scores are shown in figure 2.

S-DHI

- The S-DHI was included to identify patients with multifactorial imbalance, unsuited to a short appointment.
- While these patients scored highly on the BPPV questions, they also scored very highly on the S-DHI.
- High S-DHI scores were associated with additional health problems, such as:

endometriosis migraine diabetes poor health
brain surgery fibromyalgia stroke
Arnold Chiari intracranial hypertension
neuralgia dystonia PTSD epilepsy head injury

Pre-Appointment Screening Criteria

- The aim was to identify **uncomplicated BPPV, suitable for a shorter appointment.** This needed to:
  - ❑ Include patients who scored highly on the BPPV questions.
  - ❑ Exclude patients who scored highly on the S-DHI
- The most effective criteria are shown in table 1.

Table 1: Most effective screening criteria

BPPV score more than	S-DHI score less than	% Positive Predictive Value*	% of Patients Meet Criteria**
14	30	100	19
10	30	96	36
10	32	90	41
10	34	86	48

*For patients whose scores matched these criteria, this is the percentage who had BPPV as their main diagnosis in clinic.
**This is the percentage of balance patients who will be booked for a shorter appointment if we use these criteria in practice.

Summary

- A 4-item DHI subset was found to be the most effective at predicting a positive test for BPPV. This comprised DHI questions:
  1 (looking up) 5 (getting in and out of bed)
  13 (turning over in bed) 25 (bending over)
- Combining this subset of DHI BPPV questions with the 10-item S-DHI was an effective pre-appointment tool for identifying uncomplicated BPPV.
- **Positive predictive value up to 100% was possible.**
- When choosing criteria to use in practice, there is a trade-off between positive predictive value and the number of patients potentially streamed into a shorter appointment (BPPV pathway).

References

1) Beckerman M L. *The ASHA Leader .*2016; 21; 11
2) Whitney, S L *et al. Otology & Neurotology.* 2005; 26; 5; 1027-1033
3) Chen, W et al. *Neurol Sci.* 2016; 37; 1241–1246
4) Van Vugt, V A *et al. Journal of Clinical Epidemiology.* 2020;126; 56-64