



Effect of Physiotherapy on Knowledge and Anxiety levels of patients with Benign Paroxysmal Positional Vertigo (BPPV)

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Background and Aims

Benign paroxysmal positional vertigo (BPPV) is the most common causes of dizziness in older adults aged 60 years and above¹. BPPV attacks are debilitating and has been associated with falls, anxiety, activity restrictions and reduced quality of life². As BPPV may recur³, improving patient's understanding of the condition may help to alleviate anxiety and empower patients in self-management in the long-term.

Current clinical practice guideline recommends the use of patient education in BPPV management to increase patient's understanding of their condition and its implications⁴. As little is known about the knowledge and anxiety levels of patients with BPPV, and the impact of education delivered by a physiotherapist, this study aimed to investigate these outcomes before and after patient education is delivered in the initial physiotherapy session, as well as time spent on patient education.

Methods

Design, recruitment and participants:

Patients who attended the physiotherapy outpatient clinic at Singapore General hospital between October 2020 and March 2021 were randomly invited to complete an anonymous survey. Table 1 summarizes the recruitment criteria.

Table 1: Recruitment criteria

Inclusion criteria:	Exclusion criteria:
1. Diagnosis of BPPV by Ear Nose Throat (ENT) or Neurology physicians	1. Cognitive impairment
2. Referral to Physiotherapy	2. Inability to understand written or spoken English or Mandarin

Data collection:

Patients completed the 15-minute structured questionnaire with 20 multiple choice questions (MCQ), independently before and after the physiotherapy session. Trained staff were available to assist if required.

The following data was collected:

- Age, gender, & education level (2 categories)

- Main outcomes:

1. BPPV Knowledge score (via 9 questions)
2. Self rated knowledge, Anxiety levels (via 5-point Likert scales)

- Secondary outcome:

1. Time spent on patient education, recorded using a stopwatch
2. Patients were also asked for their preference in delivery of BPPV information, shared decision-making & satisfaction levels.

The physiotherapy session comprised of vestibular education, assessment and treatment. Information on BPPV was provided during the education segment by the physiotherapist via verbal explanation using the ear model, videos, handouts. All patient questions were addressed.

Data analysis:

Association between baseline BPPV knowledge and self-rated knowledge scores were analysed using the Spearman correlation coefficient. Differences in BPPV, self-rated knowledge and anxiety levels pre and post intervention were analysed using the Wilcoxon Signed rank test. Finally, differences between education categories were analysed using the Mann Whitney U test. Significance was set at $p < 0.05$.

Results

Twenty four patients (58% female, mean age 61 ± 12.2 years) participated in this study. At baseline, the mean BPPV knowledge score was 5.7 out of 15 whilst the median self rated knowledge was 2 out of 5 and median anxiety level was 4 out of 5.

Figure 2: Correlation between baseline BPPV and self rated knowledge scores



Figure 3: Baseline BPPV knowledge scores across education categories

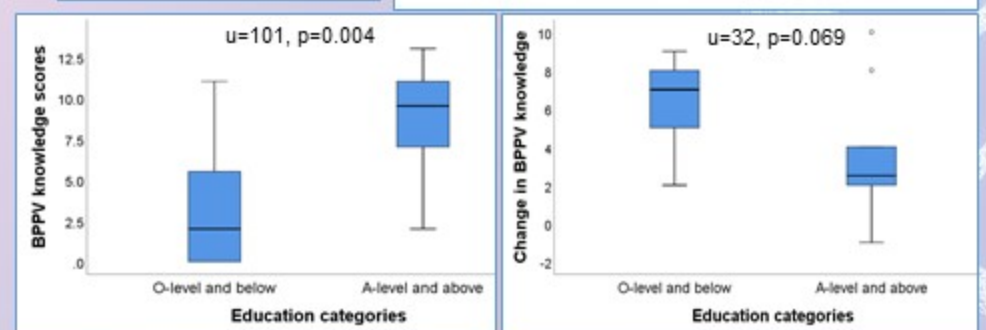


Figure 4: Change in BPPV knowledge

There were significant improvements in BPPV knowledge scores (median changed score=33.3%, $p < 0.001$); self rated knowledge (median changed score= 1.0, $p < 0.001$) and non significant decrease in anxiety levels (median changed score= 0.0, $p = 0.48$) after the initial physiotherapy session. Baseline BPPV knowledge scores and self rated knowledge showed significant positive correlation (Figure 2). Patients with lower education levels had significantly lower baseline BPPV knowledge scores (Figure 3) but showed greater gains in knowledge post intervention (Figure 4). Average time spent on patient education was 14.0 ± 8.0 minutes.

Discussion

This study demonstrates low levels of BPPV knowledge, self rated knowledge and high anxiety levels in BPPV patients. This is the first study which demonstrated the efficacy of BPPV education in improving patient knowledge, however, its effect on anxiety levels was insignificant.

BPPV and self-rated knowledge scores improved across both education categories, suggesting education performed was easy to understand. To manage anxiety, additional methods such as cognitive behavior and self regulation principles can be adopted in our education program. Although the intervention improved knowledge, duration of education took up 30% of the session. Thus novel ways of delivering education outside therapy such as via online self learning apps can be explored to reduce this contact time.

Study limitations include the small sample size and the lack of a control group. Since outcomes are reviewed immediately post intervention, long term impacts on knowledge and anxiety are not explored. Nevertheless, this pragmatic exploratory study helps to provide first insights into improving patient care.

Conclusion

This study provides pivotal initial evidence that education delivered by physiotherapists significantly increased knowledge of condition. There is also a non-significant reduction in anxiety levels. Future large randomized controlled trials can investigate novel methods of patient education delivery in improving knowledge and anxiety levels with a longer period of follow-up.

References:

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2. Lindell, E. et al. (2021). Eur Arch Otorhinolaryngol, 278(5): 1637-1644.
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Figure 1: QR code for questionnaire & dizzy eye videos