

# Quality of life in patients with persistent postural-perceptual dizziness: results from a survey in hispanic patients

## Abstract

**Objective:** Persistent postural perceptual dizziness (PPPD) is a common long-lasting cause of dizziness and/or vertigo. This condition is usually triggered by central, peripheral, or vascular injuries and may lead to physical disability and altered development of daily activities. Herein, we performed a cross-sectional in three clinical centers in Latin America using the EQ-5D questionnaire to study the quality of life (QoL) of patients diagnosed with PPPD.

**Method:** Cross-sectional study in two centers in Mexico and one center in Colombia. A qualitative and quantitative analysis was performed using GraphPad 9.0

**Results:** 50 patients diagnosed with PPPD were included. Patients indicated that symptoms worsened while standing up (n=26), when walking (n=35) and during ground transportation. Specific events such as visual movements (n=26), walking (n=31), during home stay (n=16) and stay in open and public places (n=13) are associated with discomfort in patients with PPPD. 50% of patients indicated some problems in mobility, 28% some problems on self-care, 34% some problems while performing usual activities and only 10% moderate pain during the PPPD episodes. At least 50% of patients indicated that they were moderately anxious or depressed.

**Conclusions:** Mobility, anxiety, depression, and social issues were reported in patients with PPPD. Other problems detected in this survey were fear of falling and fear of having an injury. Further multidisciplinary approach must be done for their treatment.

**Keywords:** vestibular disorders, quality of life, postural balance, positional vertigo, quality of healthcare

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**Abbreviations:** PPPD, persistent postural perceptual dizziness; QoL, quality of life

## Introduction

Persistent postural-perceptual dizziness (PPPD) is a chronic dysfunction of the vestibular system and brain that produces persistent dizziness, and brain that produces persistent dizziness, non-spinning vertigo and/or unsteadiness.<sup>1</sup> This vertigo lasts for 3 months or more and is exacerbated by upright posture, active or passive motion of self, and exposure to environments with complex or moving visual stimuli.<sup>2</sup> The etiology of this disorder still unknown, but it is thought to be caused by a disruption within or between the visual and postural control mechanisms.<sup>3</sup> Diverse PPPD triggers are described such as neuro-otologic, metabolic conditions, and psychological distress and some psychological factors are known to contribute to the development of PPPD as it is frequently seen in patients with high anxiety, neuroticism, depression, and high body vigilance.<sup>3</sup> Even though several studies have been focused on its pathophysiology, therapeutics and rehabilitation, there are few studies related to the quality of life in patients with PPPD. Herein, we conducted a cross-sectional study focused on how quality of life may be affected in a representative sample of Hispanic patients.

## Material and methods

A cross-sectional study was conducted between September 2022 to March 2023 in three centers of vertigo and dizziness in Mexico City, Guadalajara and Medellín. Patients diagnosed with PPPD according

to Barany society criteria were enrolled. The EQ-5D-3L and focused questions in Quality of Life were applied during the consultations. Patients with vestibular schwannoma, inner ear malformations and middle and inner ear infections were excluded. Also, patients with oncologic conditions were excluded from this study.

Informed consent was obtained. This study was approved by the Institutional Review Board of Universidad Pontificia Bolivariana which served to the three centers.

The EQ-5D-3L descriptive system comprises the following five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each dimension has 3 levels: no problems, some problems, and extreme problems. Patients were asked to indicate his/her health state by ticking the box next to the most appropriate statement in each of the five dimensions. Statistical analysis was performed using GraphPad 9.0 (San Diego, CA). Descriptive analysis was applied for quantitative variables.

## Results

50 patients with PPPD were included from the Centros de Vértigo y Mareo of Mexico City (Mexico), Guadalajara (Mexico) and Medellín (Colombia). Females were the most affected population (80%). Mean age was 42.8 (SD 13.4). At least 10% of patients indicated diagnosis of anxiety, 15% depression and 4% panic attacks. 26% of patients indicated previous clinical history of brain injury. Patients with PPPD also presented other concomitant vestibular disorders such as Meniere's disease (1%), Vestibular Migraine (24%), Vestibular Neuritis (25%) and Benign Paroxysmal Positional Vertigo (10%).

Participants of this study indicated some specific events as PPPD triggers such as standing up (n=26), when moving (n=35), during ground transportation (n=8) and in public places (n=4). Others described when looking to the traffic lights and during positional changes (Figure 1).

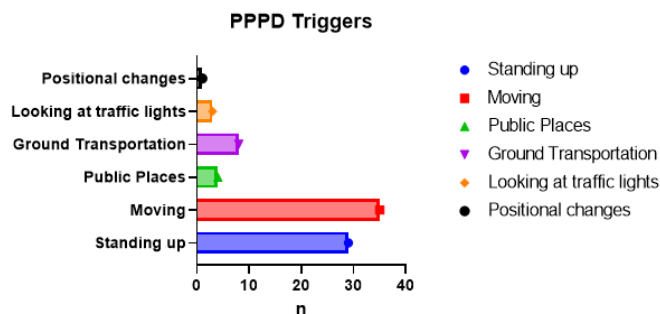


Figure 1 PPPD Triggers

Some specific events may cause discomfort in patients with PPPD including visual movements (n=26), walking (n=31), at rest (n=16) and stay in open and public places (n=13). Other events associated with discomfort in PPPD patients described were waking up and standing up (Figure 2). Patients referred other collateral symptoms to those commonly described in PPPD. Floating sensation (n=20), agoraphobia (n=30) and fatigue (n=26) were commonly described. Others reported were fear of falling and gait imbalance (Figure 3).

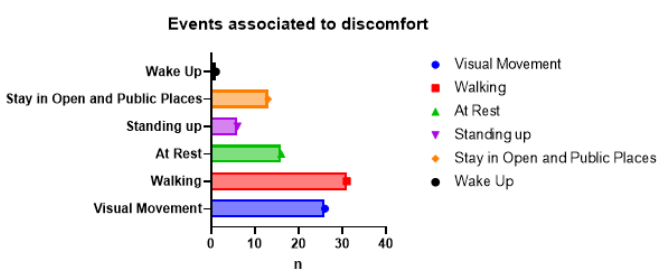


Figure 2 Events associated to discomfort in patients with PPPD

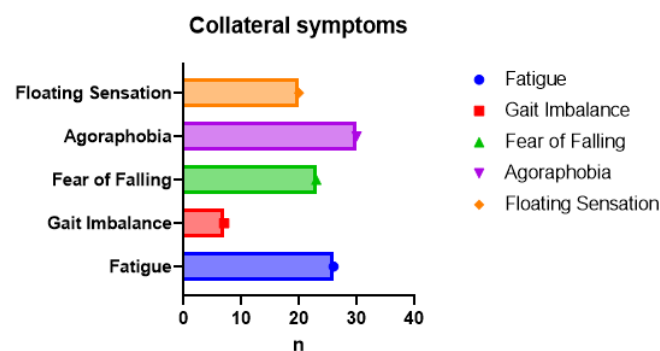


Figure 3 Collateral symptoms in patients with PPPD

Some activities such as going to social gatherings (n=28), driving (n=17), practicing sports (n=27) were commonly described as interrupted or suspended since the diagnosis of PPPD. Other such as going to the supermarket, going to the cinema, air or sea transportation were described as affected as well. At least 50% of patients indicated some problems in mobility, 28% some problems on self-care, 34% some problems while performing usual activities and only 10% moderate pain during the PPPD episodes. 50% of patients indicated that they were moderately anxious or depressed (Table 1).

Table 1 Results from the EQ-5D questionnaire.

Items	Patients with PPPD (n=50)
<b>Mobility</b>	
No problems in walking about	25 (50%)
Some problems in walking about	25 (50%)
Confined to bed	-
<b>Self-care</b>	
No problems with self-care	37 (74%)
Some problems washing or dressing.	13 (36%)
Unable to wash or dress	-
<b>Usual activities</b>	
No problems with performing usual activities.	33 (66%)
Some problems with performing usual activities.	17 (34%)
Unable to perform usual activities	-
<b>Pain/Discomfort</b>	
No pain or discomfort	45 (90%)
Moderate pain or discomfort	5 (10%)
Extreme pain or discomfort	-
<b>Anxiety/depression</b>	
Not anxious or depressed.	18 (36%)
Moderately anxious or depressed.	25 (50%)
Extremely anxious or depressed	7 (14%)

## Discussion

Standing up, walking and ground transportation triggered the episodes of PPPD in Hispanic patients. Visual movements, walking and at rest were associated with discomfort. Moderate anxiety and depression as well as moderate problems in walking about were obtained in the EQ-5D questionnaire.

Our results differed to those obtained in other study focused in QoL in patients with PPPD in Asia.<sup>4</sup> In this one self-care was spared while in our results self-care was not quite affected.<sup>4</sup> This could be potentially explained by differences in social and economic situations which are divergent between one high-income country and two low-middle income countries. This is our only result that differs from other studies performed before.<sup>4,5</sup> However, further studies should be performed to correlate how PPPD may affect social and economic fields. Other possible explanation will rely on the healthcare access in both regions.

In terms of other items obtained, our results do not differ from two studies in Europe and Asia which indicated as triggering events while the rest, visual movements, and motion discomfort.<sup>4,6</sup> Anxiety and depression were also seen in these mentioned before.<sup>4-7</sup> PPPD is associated with higher levels of neuroticism and greater psychiatric comorbidity when compared to other vestibular disorder, this may be in part due to maladaptive cognitive-behavioral responses.<sup>8-10</sup>

This study presented partial results obtained during the last months. Our results will include in our follow-up research further information regarding the EQ-5D and Visual analogue scale as well as the comparison with Dizziness Handicap Inventory. The strength of this study are the first results given in Hispanic population with PPPD, that has not been studied before. This is the first study conducted in one sample of Hispanic populations. This study has several limitations. Certain secondary vestibular diagnoses may have acted as confounding factors. Another limitation will rely on the patient's report of symptoms which may also present some potential bias.

## Conclusion

Mobility, anxiety, depression, and social issues were reported in patients with PPPD. Other problems detected in this survey were fear of falling and fear of having an injury. Further multidisciplinary approach must be done for their treatment.

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To all healthcare providers at Centros de Vertigo y Mareo in Mexico and Colombia.

## Conflicts of interest

The authors declare no conflicts of interest.

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