

# Characteristic of Patient with Benign Paroxysmal Positional Vertigo among the Elderly and the Younger Patients in 2013-2019

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## Abstract

**Background:** Benign paroxysmal vertigo (BPPV) is a mechanical problem of the peripheral vestibular system resulting from otoconia being displaced into the semicircular canals. **Objective:** To examine the clinical characteristics of benign paroxysmal positional vertigo (BPPV) between the elderly and the younger patients. **Material and Method:** This was a descriptive-retrospective study using secondary data from medical records of BPPV patients with positive testing result on the Dix-Hallpike test between January 2013 and December 2019 at Dr. Hasan Sadikin General hospital, Indonesia were retrospectively reviewed. **Results:** From 311 BPPV patients, 235 patients were in the younger group (age  $\leq$ 60-year-old) and 76 in the elderly group (age  $>$ 60-year-old). The mean age of patients in the younger group was 58 years, and 64 years in the elderly group. BPPV has been found to be more prevalent in females. The most common involved semicircular canal was the posterior canal. Idiopathic causes are the most common etiology in younger patients in contrast to elderly; secondary causes are the most common etiology. The duration of the symptom was longer in the elderly at most  $>$ 4 week and the younger group at most is 1 week or less. The proportions of patients that described the specific trigger event were less in the elderly group than the young group (65.8 % versus 82.9% At the last follow-up visit, 85,1 % and 78,9 % of patients in the younger and elderly group had a complete recovery from BPPV. The recurrences after the treatment during the last follow-up visit were comparable. **Conclusion:** BPPV is commonly found under the age of 60 years, female, posterior canal located, with the most common symptom being vertigo. Follow-up and patient management are very important to prevent recurrence and improve quality of life.

**Keywords:** Benign paroxysmal positional vertigo, Elderly, Vertigo, Dizziness

## Introduction

Dizziness is a common symptom encountered by all physicians. Symptoms of dizziness may reduce quality

of life, restrict daily activities, and increase the risk of falls and fractures. The one treatable cause and favorable prognosis of dizziness in the elderly is benign paroxysmal positional vertigo (BPPV). BPPV is a mechanical problem of the peripheral vestibular system resulting from otoconia being displaced into the semicircular canals<sup>(1, 2)</sup>. BPPV is characterized by brief episodes of vertigo, with the perception of either the environment or ones self spinning when the head is moved into certain positions. The diagnosis of BPPV confirmed by physical examination, laboratory test, and vestibular test. Is based on clinical presentation and confirmed by the present of nystagmus during the Dix-Hallpike or

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the supine roll is considered gold standard test. Typical nystagmus is characterized by up beating torsional or down beating torsional or horizontal nystagmus depending on which semicircular canal was involved. The most frequent form of BPPV is canalolithiasis of the posterior semicircular canal, The first-line treatment of BPPV is the repositioning maneuver, which is simple and effective in curing BPPV<sup>(3, 4)</sup>.

BPPV is the most common cause of vertigo. It can occur spontaneously in the 50-70 years age group. In younger ages the usual underlying cause is trauma Although BPPV is easily treated, it seems to be an underestimated cause of dizziness among elderly patients. Describing dizziness is usually difficult for patients and the cause of dizziness may be secondary to central causes, such as vascular events, tumor, and degenerative disease. Therefore, the physician undertakes an expensive testing regimen such as brain imaging studies and unnecessary vestibular testing rather than paying attention to the patients' complaint to make the correct diagnosis<sup>(1, 2)</sup>.

The aim of this study was to identify clinical characteristics of BPPV between the patients in the elderly group (age >60-year-old) and the younger group (age ≤60-year -old). Of particular interest, which characteristic are more specific to BPPV in the specific age group<sup>(5)</sup>.

### **Material and Method**

A retrospective comparative study was carried out at the otolaryngology clinic at Hasan Sadikin Hospital. The paper based as well as computer-based medical records were reviewed. For all subjects, the inclusion criteria were the diagnosis of BPPV in January 2013 to December 2019. The diagnosis was based on the history of vertigo, dizziness, or imbalance and was confirmed

in all cases by the positive results of the Dix-Hallpike, age, gender, the presenting symptoms such as dizziness, vertigo, and position-related vertigo, the involved canal, side, etiology, the duration of symptom before the diagnosis, frequency of symptom, precipitating factors, treatment outcome, recurrence rate. Subjects who had any incomplete medical records were excluded.

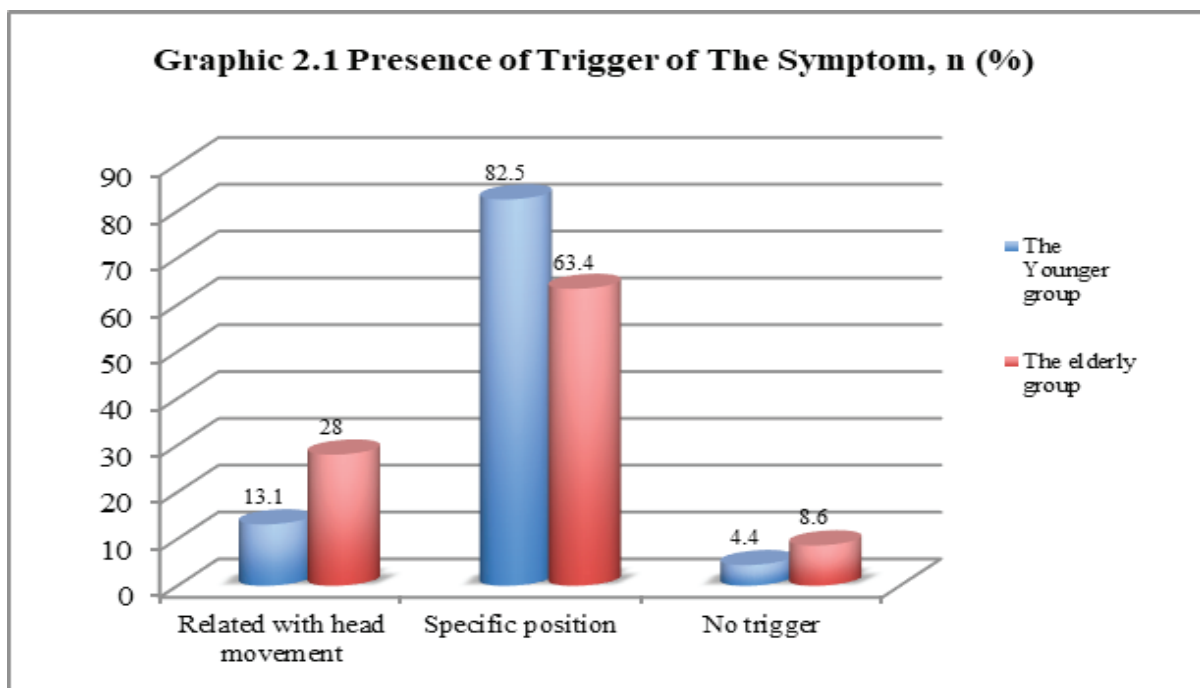
### **Results**

From the 311 BPPV patients, 235 patients were in the younger group (age ≤60-year-old) and 76 in the elderly group (age >60-year-old). The mean age of patients in the younger group was 58 years, and 64 years in the elderly group. BPPV has been found to be more prevalent in females, 149 and 57 patients were in the younger group (age ≤60-year-old) and the elderly group (age >60-year-old). The most common involved semicircular canal was the posterior canal, 187 and 65 patients were in the younger group (age ≤60-year-old) and the elderly group (age >60-year-old). Idiopathic causes are the most common etiology in younger patients in contrast to elderly, secondary causes are the most common etiology. The most common involved side was right, 125 and 51 patients were in the younger group (age ≤60-year-old) and the elderly group (age >60-year-old; table 1).

The duration of the symptom was longer in the elderly at most >4 week and the younger group at most is 1 week or less. The proportions of patients that described the specific trigger event were less in the elderly group than the young group (65.8 % versus 82.9%). At the last follow-up visit, 85,1 % and 78,9 % of patients in the younger and elderly group had a complete recovery from BPPV. the recurrence after the treatment during the last follow-up visit were comparable. The details were shown in figure 1-4.

**Table 1. Carakteristic of participant**

Characteristic	The younger group (age ≤60)	The elderly group (age >60)
Number of patient (%)	235	76
Age, years SD (range)	58 (10-60)	64 (61-93)
Male/female, n (%)	86 (36,5) /149 (63,5)	19 (25)/57 (75)
Etiology of BPPV, n (%)		
Idiopathic	180 (76)	32 (42,1)
Secondary	55 (24)	44 (57,9)
The involved side(s), n (%)		
Right	125 (53,1)	51 (67,1)
Left	92 ( 39,1)	24 ( 31,5)
Both sides	18 (7,8)	1 (1,4)
The involved semicircular canal(s), n (%)		
Anterior canal	1 (0,4)	1 (1,3)
Posterior canal	187 (79,5)	65 (85,5)
Lateral canal	34 ( 14,4)	8 (10,5)
Multiple canals	13 (5,7)	2 (2,7)



**Figure 1. Presence of Trigger of The Symptom**

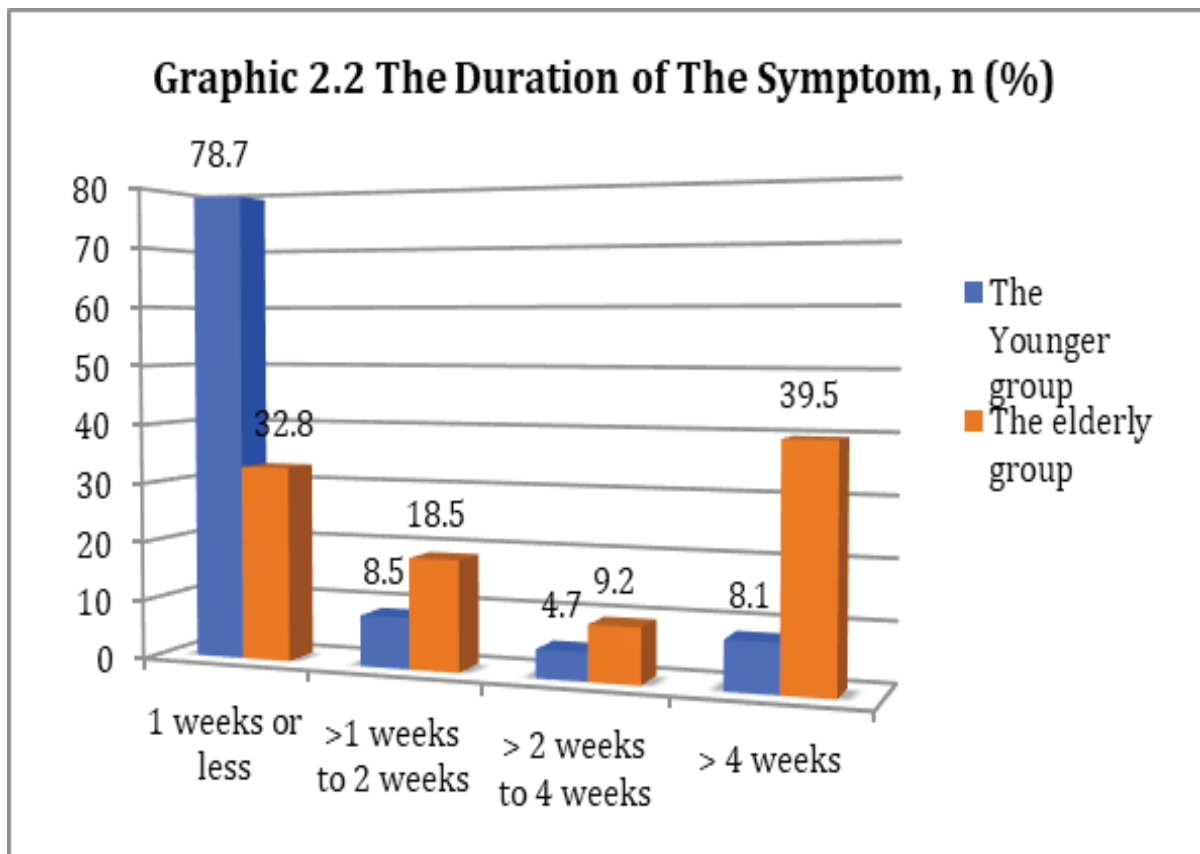


Figure 2. The Duration of the Symptom

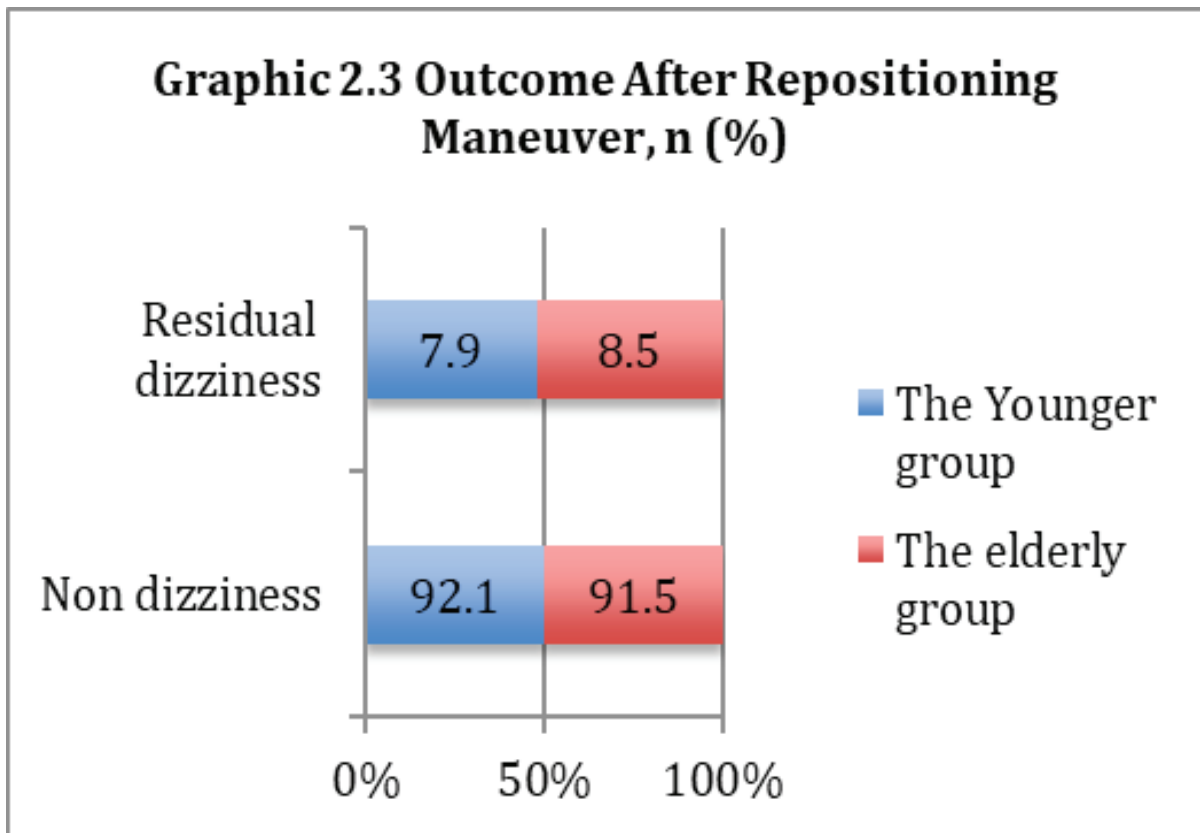
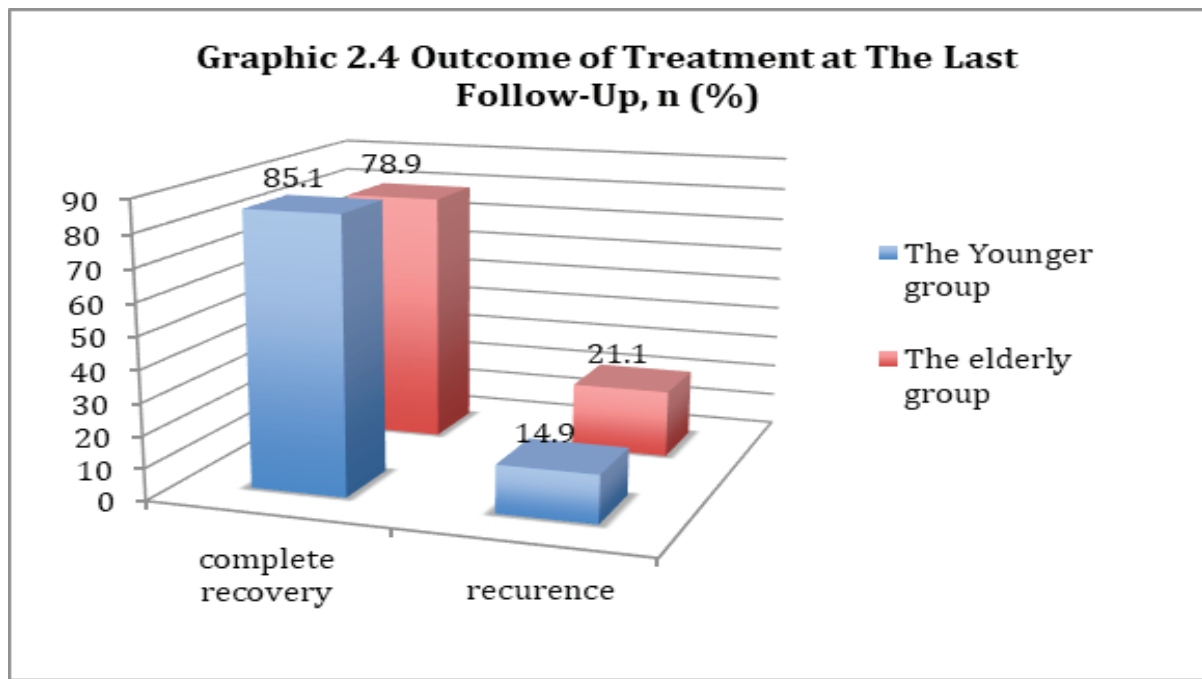


Figure 3. Outcome after Repositioning Maneuver



**Figure 4. Outcome of Treatment at the Last Follow-Up**

### Discussion

The prevalence of dizziness in the elderly patient was 36 to 60% in the primary care setting and was attributed to vestibular vertigo about 28<sup>(6-8)</sup>. In Hasan Sadikin hospital, the presentation dizziness from 7 patients under 60 years old was 3% while from 3 patients aged over 60 years was 4.3% of the total 311 patients who experienced balance disorders. From previous studies<sup>2</sup>, and the data we collected in the Hasan Sadikin hospital, we found that dizziness was the uncommon symptom of all balance disorder patients.

In 311 patients, we found patients less than 60 years who experienced vertigo as many as 212 patients and patients over 60 years of age were 50 patients with presentations 93% and 70.4%. This is the most common symptom of all balance disorders symptoms in accordance with previous study. Based on data from the study of Plodpai et al, showed that patients who experienced vertigo under 60 years were 579 patients and patients over 60 years were 317 patients out of a total of 951 patients<sup>(5)</sup>.

From 235 patients under 60 years, 215 of them did not complain of dizziness after repositioning the Dix-Halpike maneuver. The remaining 20 patients still felt dizzy after repositioning, due to late diagnosis of BPPV, so that the patient experienced a longer duration of symptoms. Stamboliva et al, demonstrated having a longer symptom duration before diagnosis could adversely affect the severity of postural instability after the repositioning maneuver examined by static posturography. Even though the repositioning maneuver eradicated vertigo and nystagmus, the postural instability did not disappear<sup>(6)</sup>.

The simple and effective method to treat BPPV is the repositioning maneuver<sup>(7, 9, 10)</sup>. The maneuver reduces postural instability and body oscillation<sup>(11)</sup>. Previous studies found that the impacted on health-related quality of life of BPPV could be significantly improved by the repositioning maneuver<sup>(12)</sup>. The effectiveness of the maneuver among the elderly BPPV patient was similar to the general population<sup>(13, 14)</sup>.

Plodpai et al, confirmed that after the repositioning maneuver, dizziness was resolved in 91.9% of the

younger group and 89.3% of the elderly group. Complete recovery was maintained until the last follow-up visit in 77.8% and 78.1% of the younger and the elderly group, respectively<sup>(5)</sup>. In Hasan Sadikin Hospital itself, we found complete recovery after the last follow-up in patients under 60 years of age reached 200 patients from 235 patients, whereas among older patients reached 60 patients from a total of 76 patients.

Therefore, We suggest that diagnosis of BPPV should be done immediately before it's too late because delays in diagnosis will lead to an increase in recurrence rates and reduce complete recovery. Plodpai et al, encourage performing Dix-Hallpike test in all dizzy and unsteadiness elderly patients. This will be benefit in the recognition and the management of BPPV in elderly patients, resulting in the improvement of the patients' quality of life<sup>(5)</sup>.

The limitation of this study are that all patients come from the same ethnicity (sundanese), did not undergoing imaging procedure, lack of education so that to sort out the actual symptoms is difficult, and less socioeconomic causing the follow-up of patients is often late.

### Conclusion

BPPV is most commonly found under the age of 60 years, female sex, posterior canal located, with the most common symptom being vertigo. Follow-up and patient management are very important to prevent recurrence and improve quality of life.

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**Conflict of Interest:** The authors declare that they have no conflict of interest.

**Ethical Approval:** We have conducted an ethical approval base on Declaration of Helsinki at Ethical Committee in Dr. Hasan Sadikin General Hospital, Bandung, Indonesia.

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