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Understanding, diagnosing, treating – vestibular symptoms as a challenge for contemporary physiotherapy in Poland: cross-sectional survey

Beata Mielańczuk-Lubecka

beata.mielanczuk-lubecka@wum.edu.pl

Medical University of Warsaw

Hanna Szymańska

University of Warmia and Mazury in Olsztyn

Jeremi Kania

Medical University of Warsaw

Krzysztof Głowacki

Medical University of Warsaw

Zofia Żukowska

Medical University of Warsaw

Izabela Domitrz

Medical University of Warsaw

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1. Beata Mielańczuk-Lubecka, Departament of Neurology, Faculty of Medicine and Dentistry Medical University of Warsaw, Poland; Bielański Hospital, Warsaw, Poland; beata.mielanczuk-lubecka@wum.edu.pl

2. Hanna Szymańska, Department of Medical Biology, Collegium Medicum, University of Warmia and Mazury in Olsztyn, Poland; hanna.szymanska@uwm.edu.pl

3. Jeremi Kania, Departament of Neurology, Faculty of Medicine and Dentistry Medical University of Warsaw, Poland; Bielański Hospital, Warsaw, Poland; jeremi.kania@wum.edu.pl

4. Krzysztof Głowacki, Departament of Neurology, Faculty of Medicine and Dentistry Medical University of Warsaw, Poland; Bielański Hospital, Warsaw, Poland; krzysztof.glowacki@wum.edu.pl

5. Zofia Żukowska, Departament of Neurology, Faculty of Medicine and Dentistry Medical University of Warsaw, Poland; Bielański Hospital, Warsaw, Poland; zofia.zukowska@wum.edu.pl

6. Izabela Domitrz, Departament of Neurology, Faculty of Medicine and Dentistry Medical University of Warsaw, Poland; Bielański Hospital, Warsaw, Poland; izabela.domitrz@wum.edu.pl

Corresponding author: Beata Mielańczuk-Lubecka, beata.mielanczuk-lubecka@wum.edu.pl

Abstract: Vestibular rehabilitation is an evidence-based component of physiotherapy for patients with dizziness, vertigo, and balance disorders. Despite the growing role of physiotherapists in the care of patients with vestibular disorders, education in vestibular diagnostics, therapy, and interdisciplinary management remains limited in Poland. This study aimed to assess physiotherapists' knowledge and clinical experience regarding dizziness, vestibular disorders, and diagnostic and therapeutic approaches, as well as to identify educational needs in this field. A cross-sectional online survey was conducted in Poland. The questionnaire consisted of 19 items covering professional experience, education, specialty, clinical experience in managing patients with dizziness, knowledge of vestibular disorders, familiarity with diagnostic and therapeutic methods, and the need for further training and interdisciplinary collaboration. A total of 117 fully completed questionnaires were analyzed. Forty-nine physiotherapists with experience in managing vestibular disorders were included in the analysis. Spontaneous dizziness was the most frequently recognized symptom (73.0%). The Romberg test, neurological examination, and nystagmus assessment were the most used diagnostic methods. Most respondents reported insufficient undergraduate education (73.5%), and 98% considered their knowledge inadequate. Despite frequent contact with patients presenting with vestibular symptoms, physiotherapists' knowledge and experience remain insufficient. The findings highlight the need to expand undergraduate and postgraduate education and strengthen interdisciplinary collaboration in the care of patients with vestibular disorders.

Contribution of paper

The key messages

1. The need to educate physiotherapists in the diagnosis and treatment of patients with vestibular syndromes of various etiologies.

2. Modern care for patients with vestibular syndrome should be interdisciplinary, considering the key role of physiotherapy.

New knowledge

1. Identifying the need to educate physiotherapists in the diagnosis and treatment of vestibular syndromes.

2. Modern physiotherapy in neurootology.

Keywords: dizziness, vertigo, vestibular syndromes, physiotherapy

1. Introduction

Dizziness, vertigo, balance disorders, and fear of falling are increasingly common problems encountered by physiotherapists in daily clinical practice. Patients usually report subjective symptoms, while their objective assessment remains challenging due to the overlapping clinical presentation and variable nature of vestibular syndromes. According to current reports, the diagnostic process in this group of patients should include a detailed medical history and physical examination, with particular emphasis on the assessment of the vestibulo-ocular reflex (VOR), nystagmus, and skew deviation. In patients with suspected benign paroxysmal positional vertigo (BPPV), positional diagnostic maneuvers are required. Additionally, a neurological examination should be carried out.

The current approach to vestibular symptoms and vestibular disorders is reflected in the evidence-based consensus document developed by the *Committee for the Classification of Vestibular Disorders of the Bárány Society*, which defines vestibular syndromes, diagnostic procedures, and treatment principles. Epidemiological studies focus on either the prevalence of symptoms or specific vestibular disorders. Regarding the epidemiology of vestibular symptoms, large population-based studies have shown that dizziness, including vertigo, occurs with a frequency of 15-20% in adults[11]. However, the risk of experiencing such symptoms at least once in a lifetime exceeds 20–30% of the healthy working-age population[10,19]. In people over 65 years of age, symptoms such as vertigo, dizziness, and balance disorders may occur in up to 30–50% of the population, as confirmed by European and American epidemiological studies[5,1]. In contrast, data on children are scarce and burdened by methodological limitations, including difficulties in interpreting terms describing dizziness used in questionnaires. According to available studies, the prevalence of dizziness in the pediatric population is 6-18%[11]. The largest epidemiological study conducted in the United States has shown that approximately 35% of Americans over the age of 40 demonstrate evidence of vestibular dysfunction on balance testing. This suggests that vestibular dysfunction may affect up to 69 million US residents. At the same time, a strong association has been demonstrated between vestibular dysfunction and an increased risk of falls, reduced mobility, and impaired quality of life[5]. In addition, a recent U.S. retrospective cohort study including more than 4.5 million patients receiving routine clinical care estimated the prevalence of vestibular disorders at 2.98%. Patients with vestibular disorders had a mean age of 61.3 years, 67.0% were women, and they had significantly increased odds of falls, cerebrovascular disease, ischemic heart disease, and diabetes[15]. In Europe, the best-established epidemiological studies conducted in Germany showed that the lifetime (18–79 years) prevalence of vestibular vertigo is 7.4%, the annual prevalence is 4.9%, and the annual incidence is 1.4%. The condition is 2–3 times more common in women than in men, and

its prevalence increases with age[10,12]. In turn, a French study involving a pediatric population reported vestibular dysfunction in 36.5% of children presenting with balance disorders and in 54.5% of those with hearing loss. Among children with balance disorders, the most frequent causes included inner ear abnormalities, delayed postural motor development, hearing loss, and vestibular neuritis. By contrast, infections, inner ear abnormalities, and genetic syndromes were the predominant causes in children with hearing loss[17]. Available epidemiological data for the general population in Poland are limited to the northern part of the country, where Wojtczak et al. estimated the prevalence of dizziness at 16.4%, with postural changes being the most common cause. The condition is more frequently manifested as dizziness and presyncope in young patients, while in older patients over 50 years of age, it is manifested as balance disorders. A higher incidence of vestibular symptoms has been reported in women, the elderly, and patients with comorbidities such as hypertension, diabetes, dyslipidemia, hypothyroidism, cardiac arrhythmias, and depression[18].

Increasing attention is currently being paid to the interdisciplinary approach in the care of patients with vertigo and balance disorders, as well as to the need for education of physiotherapists in this field.

Based on the above, there is a clear need for the education of medical personnel based on transparent and standardized recommendations that can be implemented across academic training centers. Therefore, the authors of the present study, who are involved in daily clinical practice at the Department of Neurology, Faculty of Medicine and Dentistry, Medical University of Warsaw, place particular emphasis on preparing medical and physiotherapy students for interdisciplinary cooperation in the care of patients with vestibular syndromes. Both the educational objectives and the syllabus content within the physiotherapy curriculum include the diagnosis and treatment of vestibular disorders as part of neurological education. The educational principles are consistent with the *International Guidelines for Education in Vestibular Rehabilitation Therapy* published in 2011[4] and, since 2023, with the *Curriculum for Vestibular Medicine (VestMed) proposed by the Bárány Society*[16].

The aim of the present study was to assess the level of knowledge and clinical experience of physiotherapists regarding dizziness, as well as diagnostic and therapeutic possibilities in vestibular disorders, in the context of identifying educational needs in this area.

2. Materials and methods

The cross-sectional study was conducted in Poland in an online format from July 31, 2025, to the end of June 2026, following approval by the Bioethics Committee at the Medical University of Warsaw (AKBE/223/25) on July 30, 2025.The study was conducted in accordance with the Declaration of Helsinki. Prior to the commencement of the study, approval was obtained from an ethics committee, which confirmed that the research complied with the principles of research ethics. All participants were informed that submission of their responses constituted informed consent to participate in the study.

This research received no funding. Professionally active physiotherapists, regardless of age, were eligible to complete an anonymous survey. The survey included 19 questions (Appendix) regarding the physiotherapists' experience, education, specialty, experience working with patients suffering from dizziness, knowledge of conditions associated with dizziness, familiarity with diagnostic and therapeutic methods, and the need for further training and working in an interdisciplinary team. The survey was preceded by an explanation of the purpose of the questionnaire and an assurance of anonymity. Participation in the study was voluntary, and participants were

not required to provide personal data or their professional license number. Inactive physiotherapists and physiotherapy students were not eligible to complete the survey.

The authors developed a survey based on *„International guidelines for education in vestibular rehabilitation therapy"* (Cohen H et al. 2011) and their own clinical experience. The survey was distributed via social media using Google Forms, which is widely accessible to professionally active physiotherapists. Each participant could complete the survey only once. The questionnaire was distributed several times throughout the study. Ultimately, 117 fully completed forms were obtained, which were anonymized and stored in an encrypted format, with access limited to the authors. We did not assess the representativeness of our study population.

Data were analyzed using SAS version 9.4 (SAS Institute, NC, 2025). Descriptive statistics (frequency and percentage) were used to summarize demographic characteristics of the participants (n=112) as well as the knowledge and attitudes of physiotherapists who declare practice with vestibular syndromes (n=49). Frequency of practice with vestibular syndromes was presented in a pie chart. Data from multiple-response questions were presented using bar charts.

3. Results

The table below (table 1.) presents demographic data of the 117 respondents regarding the physiotherapists' education, professional experience, and place of practice. The majority of participants, 86 (73.5%), reported holding a master's degree. Additionally, 9 physiotherapists (7.7%) held specialist degrees, 15 (12.8%) were certified physiotherapy specialists, and 6 (5.1%) reported completing specialist training in physiotherapy combined with an additional academic degree. One therapist (0.9%) held a bachelor's degree.

The experience of respondents in the profession of physiotherapist was analyzed, obtaining data indicating that 36.7% (n=43) of respondents had a relatively short work experience – 0-5 years, 35.9% (n=42) declared work experience in the range of 11-20 years, while 13.7% of physiotherapists (n=16) declared 6-10 years of work experience and the same group over 20 years of employment in the profession.

The study's authors obtained information regarding the location of services provided by respondents. Most respondents practiced in urban areas with a population exceeding 50.000, representing 92 physiotherapists (78.6%). In towns with populations below 50.000, 22 physiotherapists (18.8%) provided services. Only three (2.6%) of the respondents worked in rural areas.

Table 1. Demographics of the respondents (n=117)

Factor	n	%
Professional experience (years)		
0 – 5	43	36.7
6 – 10	16	13.7
11 – 20	42	35.9
20+	16	13.7
Degree		

Bachelor	1	0.9
MSc	86	73.5
MSc and scientific degree	9	7.7
PT specialist	15	12.8
PT specialist and scientific degree	6	5.1
Workplace type		
Rural	3	2.6
Town (<50k)	22	18.8
City (>50k)	92	78.6

Additionally, the type of facility where the survey participants provided their services was determined. Respondents could select more than one place of employment, so the chart (Figure 1.) below presents a summary of more responses than the actual number indicates. The largest number of surveyed physiotherapists reported working in private practice (63 responses) and ambulatory care (54 responses). The question about a teaching hospital received 19 responses, and a municipal hospital received 14 responses. Seven physiotherapists worked in an institute hospital.

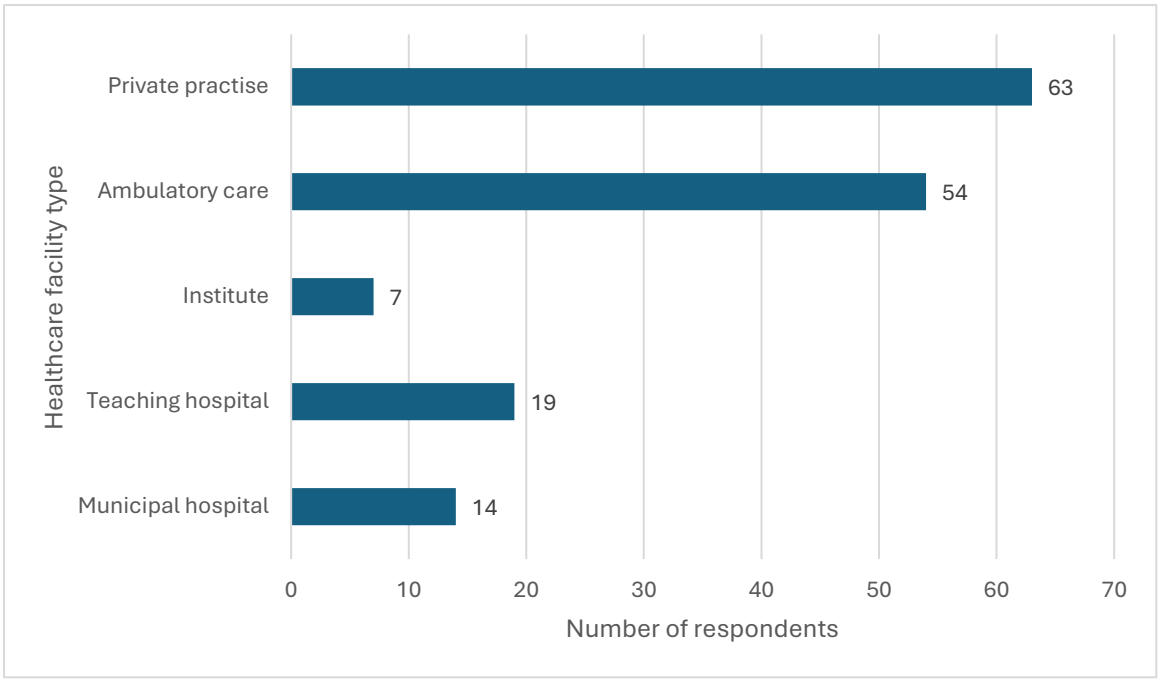


Figure 1. Healthcare facility type (n=117, but multiple-response question)

Similarly, a multiple-choice question concerned the age group of patients with whom respondents work. The chart (Figure 2.) below presents a summary of more responses than the actual number indicates. The largest group provided physiotherapy to adults (n=97) and older patients (n=70). Twenty-seven respondents reported working with children.

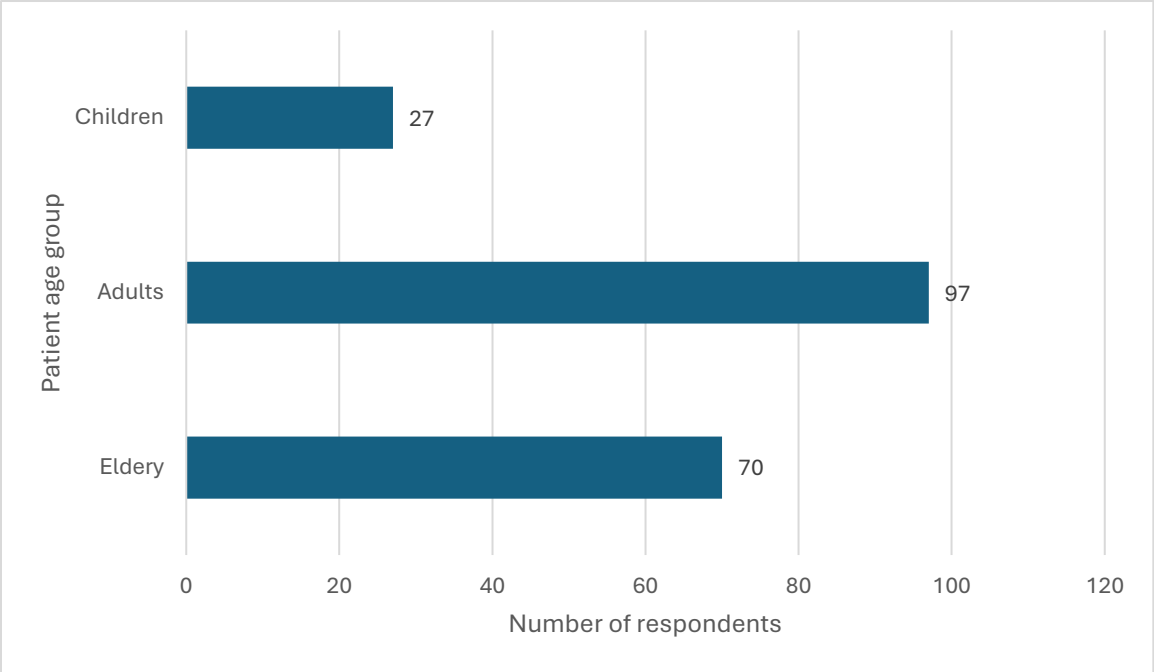


Figure 2. Patient age group (n=117, but multiple-response question)

Surveyed physiotherapists were asked to indicate which medical specialties/fields of practice they practiced. Respondents could select multiple answers, which resulted in the chart presenting a larger total than the number of responses indicated (Figure 3.). The most frequently selected fields were orthopedics (n=74), geriatrics (n=27), neurology (n=25), and pediatrics (n=19). Twenty-seven respondents selected other fields of medicine, including pulmonology, urogynecology, physical therapy, otolaryngology, and others.

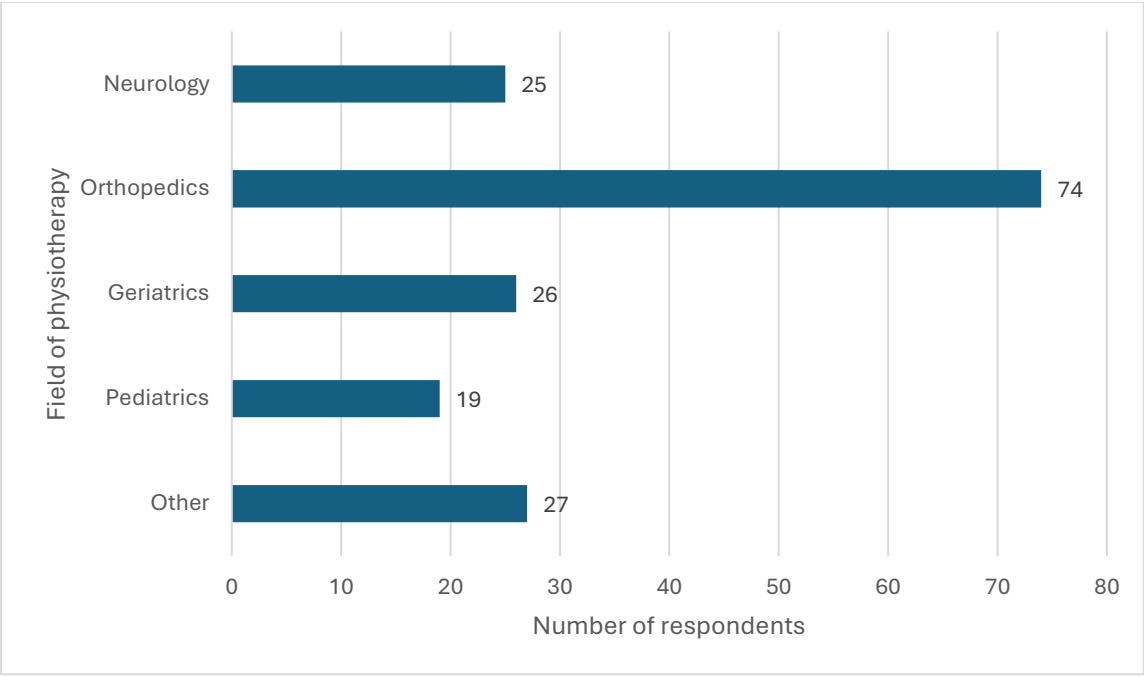


Figure 3. Fields of physiotherapy (n=117, but multiple-response question)

The main part of the survey addressed vestibular syndromes directly. 46.1% (n=56) of respondents reported rarely working with patients with vertigo, and 12.0% (n=14) never did. The response "sometimes" was given by 31.6% (n=37) of respondents. 10.3% (n=12) of physiotherapists reported frequent experience in this area (Figure 4.).

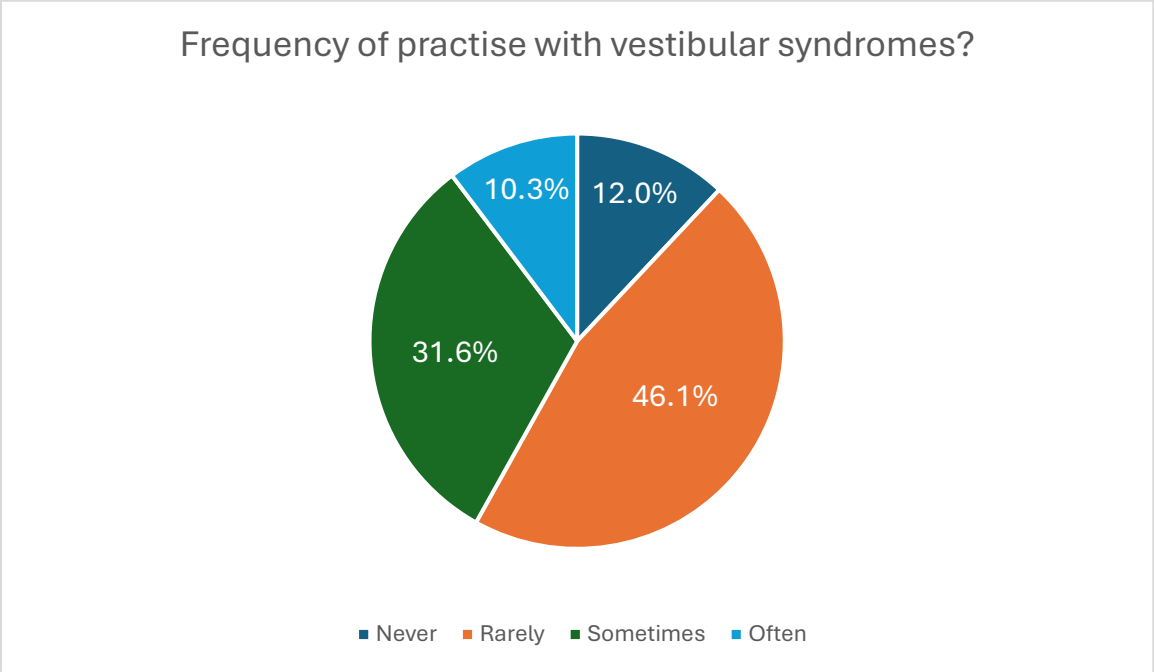


Figure 4. Physiotherapists' practice with patients with vestibular syndromes

The next part of the study will concern the total group of respondents whom the authors considered to be working in the area of vestibular syndromes, i.e. 49 physiotherapists (n=37 and n=12). The demographic data of this group is presented in the table below (Table 2.).

Table 2. Demographics of the physiotherapists with vestibular-practice experience (n=49)

Factor	n	%
Professional experience (years)		
0 – 5	21	42.9
6 – 10	4	8.2
11 – 20	16	32.6
20+	8	16.3
Degree		
Bachelor	1	2.0
MSc	36	73.5
MSc and scientific degree	3	6.1

PT specialist	6	12.3
PT specialist and scientific degree	3	6.1
Workplace type		
Rural	1	2.0
Town (<50k)	11	22.5
City (>50k)	37	75.5

Respondents were asked about their knowledge of different types of dizziness and vestibular syndromes associated with this symptom. Most frequently, respondents indicated spontaneous dizziness (n=36, 73.5%). Provoked, peripheral, and central disturbances were selected by 27 (55.1%), 29 (59.2%), and 24 (49.0%) physiotherapists with experience treating patients with dizziness. Vertigo-type dizziness is known to 36.7% (n=24) of the respondents. Five of the respondents did not know any of the types of dizziness mentioned. The most frequently selected conditions associated with dizziness were BPPV (63.3%), vestibular migraine (59.2%), focal CNS lesion (57.1%), Bow Hunter's syndrome (53.1%), TIA (44.9%), and PPPD (42.9%). Relatively few study participants were familiar with Ménière's disease (4.1%), Mal de Débarquement (4.1%), or perilymphatic fistula (6.1%). All conditions were familiar to 4.1% of respondents, while 10.2% were unknown to any of them. Detailed analysis is provided in Table 3.

Table 3. Knowledge of dizziness types and conditions among physiotherapists with vestibular-practice experience (n=49)

Factor	No (%) of respondents who declare knowledge
Type of dizziness	
spontaneous	36 (73.5%)
provoked	27 (55.1%)
peripheral	29 (59.2%)
central	24 (49.0%)
vertigo	18 (36.7%)
none of them	5 (10.2%)
Health condition	
BPPV	31 (63.3%)
PPPD	21 (42.9%)
Bow Hunter's syndrome	26 (53.1%)
PPV	12 (24.5%)
vestibular migraine	29 (59.2%)
Ménière's disease	2 (4.1%)

vestibular paroxysmia	4 (8.2%)
acute unilateral vestibulopathy	6 (12.2%)
bilateral vestibulopathy	7 (14.3%)
focal CNS lesion	28 (57.1%)
TIA	22 (44.9%)
Mal de Débarquement	2 (4.1%)
perilymphatic fistula	3 (6.1%)
presbyastasis	4 (8.2%)
none of them	5 (10.2%)
all of them	2 (4.1%)

The authors analyzed the responses regarding the knowledge and the use of diagnostic and therapeutic methods in the group of respondents who declared experience in practice with patients with dizziness.

The most frequently mentioned methods, which were described as known and used, include the Romberg test (30.6%), neurological examination (22.5%), and nystagmus assessment (18.4%). The remaining methods are used by no more than 10.2% of therapists. Furthermore, 51.0% of respondents were familiar with nystagmus assessment but did not use it. Similarly, knowledge of other methods without their use applies to, among others, the supine head roll test (44.9%), Romberg test (44.9%), and the head impulse test (42.9%). Among those working with patients with vestibular syndrome, 75.5% were unfamiliar with videonystagmography, the retropulsion test, and CTSIB. The supine head hanging test was unfamiliar to 69.4% of therapists, and the assessment of oblique eye deviation was unknown to 63.3% of respondents.

The most well-known therapeutic method among respondents (51.0%), but rarely used (6,1%), was virtual reality. However, 49.0% of respondents were unfamiliar with this method. Furthermore, the lack of familiarity with other methods ranged from 51.0% to 89.8%. The remaining data are included in Table 4.

Table 4. Known and used diagnostic and therapeutic methods for vestibular rehabilitation among physiotherapists who declare practice with vestibular syndromes (n=49)

Factor	No (%) of respondents		
	Know/use	Know/don't use	Don't know
Diagnostic methods			
supine head roll test	3 (6.1%)	22 (44.9%)	24 (49.0%)
Dix-Hallpike maneuver	4 (8.2%)	18 (36.7%)	27 (55.1%)
supine head hanging test	3 (6.1%)	12 (24.5%)	34 (69.4%)
head impulse test	3 (6.1%)	21 (42.9%)	25 (51.0%)
skew deviation	1 (2.0%)	17 (34.7%)	31 (63.3%)
neurologic examination	11 (22.5%)	21 (42.9%)	17 (34.7%)

videonystagmography	1 (2.0%)	11 (22.5%)	37 (75.5%)
Romberg test	15 (30.6%)	22 (44.9%)	12 (24.5%)
Unterberger test	5 (10.2%)	20 (40.8%)	24 (49.0%)
retropulsion test	3 (6.1%)	9 (18.4%)	37 (75.5%)
CTSIB*	1 (2.0%)	11 (22.5%)	37 (75.5%)
nystagmus assessment	9 (18.4%)	25 (51.0%)	15 (30.6%)
Therapeutic methods			
Gufoni maneuver	2 (4.1%)	6 (12.2%)	41 (83.7%)
Epley maneuver	6 (12.3%)	18 (36.7%)	25 (51.0%)
Yacovino maneuver	1 (2.0%)	4 (8.2%)	44 (89.8%)
Semont maneuver	2 (4.1%)	14 (28.6%)	33 (67.3%)
Brandt-Daroff exercises	3 (6.1%)	8 (16.3%)	38 (77.6%)
vestibular rehabilitation	5 (10.2%)	10 (20.4%)	34 (69.4%)
optokinetic training	7 (14.3%)	14 (28.6%)	28 (57.1%)
adaptation exercises	7 (14.3%)	12 (24.5%)	30 (61.2%)
habituation exercises	5 (10.2%)	11 (22.5%)	33 (67.3%)
substitution exercises	1 (2.0%)	9 (18.4%)	39 (79.6%)
virtual reality	3 (6.1%)	22 (44.9%)	24 (49.0%)
Cawthorne-Cooksey exercises	2 (4.1%)	3 (6.1%)	44 (89.8%)

**CTSIB (Clinical Test of Sensory Interaction and Balance*)

Most respondents (73.5%) stated that they did not acquire knowledge about vertigo during their studies, and that the knowledge they received during their education was unsatisfactory (98.0%). Therapists admitted to participating in courses to improve their qualifications (30.6%), and an additional 73.5% declared a need for further training. Most respondents (91.8%) believed that a qualified physiotherapist should be involved in the diagnostic process for patients with vertigo and work as part of an interdisciplinary team (95.9%). 69.4% of study participants reported working in an interdisciplinary team. Detailed data are provided in Table 5.

Table 5. Attitudes towards vestibular rehabilitation among physiotherapists who declare practice with vestibular syndromes (n=49)

Question (shortened)*	No (%)
Did you acquire your knowledge of dizziness during your studies?	
Yes	13 (26.5%)
No	36 (73.5%)
Is the knowledge you gained during your studies regarding dizziness sufficient?	

Yes	1 (2.0%)
No	48 (98.0%)
Have you taken any specialized courses on dizziness?	
Yes	15 (30.6%)
No	34 (69.4%)
How would you rate your knowledge of dizziness?	
Very good	1 (2.0%)
Good	8 (16.3%)
Average	19 (38.8%)
Low	14 (28.6%)
Insufficient	7 (14.3%)
Do you feel the need to improve your skills on dizziness?	
Yes	36 (73.5%)
No	4 (8.1%)
I don't know	9 (18.4%)
Should physical therapists be involved in the diagnostic process?	
Yes	45 (91.8%)
No	0 (0.0%)
I don't know	4 (8.2%)
Do you work in an interdisciplinary team?	
Yes	34 (69.4%)
No	15 (30.6%)
Should a physical therapist practise in an interdisciplinary team?	
Yes	47 (95.9%)
No	0 (0.0%)
I don't know	2 (4.1%)

** Full version of the questions – see the appendix*

4. Discussion

The topic of therapists' knowledge of vestibular syndromes has already been addressed by researchers from various centers in different countries[2,8,6,16]. This demonstrates the growing need for the education of medical personnel in recognizing vestibular disorders and planning appropriate therapeutic pathways for patients presenting with vestibular symptoms. The authors of the aforementioned studies, based on their professional experience, reported similar observations. Therefore, an attempt was also made to investigate this issue in Poland.

We received 117 fully completed surveys. Based on the data collected, we determined that the vast majority of respondents were physiotherapists with higher education and an MSc degree (n = 86; 73.5%), working primarily

in private practice (n = 63) and ambulatory care (n = 54). The number of respondents working in private practice and ambulatory care exceeds 117 due to the possibility of selecting more than one answer, which may indicate broader professional experience among the participants. Most respondents practiced in urban areas with a population exceeding 50.000 inhabitants (78.6%; n = 92). The study group was diverse in terms of professional experience. The most frequently reported length of service was up to 5 years (36.7%), followed by 11–20 years (35.9%). Work experience of 6–10 years and more than 20 years was reported by 13.7% of respondents in each category.

Of the 117 surveys analyzed, 49 respondents (approximately 41.9%) were found to work in the area of vestibular disorders. These were mostly individuals with less than 5 years of professional experience (42.9%). This could suggest that young physiotherapists had greater opportunities to acquire knowledge about vestibular syndromes, for example during their university education, and to retain this relatively recent knowledge. However, this assumption was not confirmed in our study (see below). Considering that the surveyed physiotherapists provide services in various medical fields (primarily orthopedics, geriatrics, and neurology), typically involving adult and elderly patients, it can be assumed that vestibular disorders are a widespread and relatively common problem in their daily clinical practice.

More than half of those reporting treatment of patients with vestibular symptoms were able to identify several types of syndromes, including spontaneous (73.5%), provoked (55.1%), peripheral (59.2%), and central (49.0%). Vertigo-type symptoms were known to 36.7% of the respondents. These data indicate gaps in the clinical preparation necessary for working with patients with vestibular disorders. We observed that the group of therapists declaring experience in working with patients presenting vestibular symptoms did not demonstrate substantial familiarity with diagnostic methods. Individual assessment methods were known and used by 2.0% to 30.6% of respondents. For example, seemingly essential methods, such as the Dix-Hallpike maneuver and neurological examination, including nystagmus assessment, were indicated by 8.2%, 22.5%, and 18.4% of respondents, respectively. More specialized methods, such as skew deviation assessment, VNG, and CTSIB, were known and used by only 2.0% of therapists. The Romberg test was indicated relatively frequently (30.6%); however, according to the authors, this percentage remains remarkably low given the profile of patients with whom the respondents work. Knowledge of some diagnostic methods without their practical application is more advantageous; however, it still falls short of the needs identified by the authors. This creates a need for education, which is also confirmed by Galgon AK et al[7].

We also analyzed where respondents acquired their knowledge of vestibular syndromes. Thirteen of the 49 participants (26.5%) reported obtaining this knowledge during their studies, while 98.0% of respondents (n = 49) considered it insufficient. Additionally, 73.5% of therapists (n = 49) declared a need to improve their skills in the diagnosis and treatment of patients with vestibular syndromes.

Given the growing need for interdisciplinary care of patients with vestibular symptoms[9,13,14], we examined whether therapists reporting experience in the treatment of vestibular syndromes were members of such teams. Although 95.9% of respondents agreed that a physiotherapist should be a member of an interdisciplinary team, and 91.8% indicated the important role of physiotherapist in the diagnostic process, only 69.4% of respondents confirmed their participation in such teams.

5. Limitations of the study

There are several limitations to the presented study. The first limitation may be the limited representativeness of the study group, primarily due to the voluntary participation of respondents and the distribution of the survey via social media. Another concern is that the survey may have been completed by individuals interested in vestibular syndromes for various reasons. This may have influenced the results. Furthermore, the method of survey distribution made it impossible to determine the exact number of recipients who saw the invitation to participate in the study and had actual access to the questionnaire; therefore, calculation of the response rate was not possible.

6. Conclusion

Physiotherapists included in the study frequently encounter patients reporting vestibular symptoms in their clinical practice; however, only a small group declared frequent experience in the diagnostic and therapeutic management of vestibular syndromes. It was observed that physiotherapists' knowledge in this area, particularly regarding specialized diagnostic tests, nystagmus assessment, and therapeutic maneuvers used in BPPV, remains insufficient. Most respondents indicated that the knowledge acquired during their university education was inadequate and emphasized the need for further education in the field of vertigo and vestibular disorders, as well as for interdisciplinary cooperation, with particular emphasis on the important role of the physiotherapist in the diagnostic and therapeutic process. Furthermore, the results indicate the need to develop coherent educational programs and create opportunities for postgraduate training in the diagnosis and rehabilitation of patients with various vestibular syndromes.

Conflicts of interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

1. Agrawal Y, Carey JP, Della Santina CC, Schubert MC, Minor LB. *Disorders of balance and vestibular function in US adults: data from the National Health and Nutrition Examination Survey, 2001-2004*. Arch Intern Med. 2009;169(10):938-944.

2. ALShammari M, ALSharif DS, Aldaihan MM, Whitney SL. *Vestibular rehabilitation in Saudi Arabia: practice, knowledge, and beliefs of physical therapists*. J Clin Med. 2025;14(7):1-16.

3. Cohen HS, Gottshall KR, Graziano M, Malmstrom EM, Sharpe MH. *International survey of vestibular rehabilitation therapists by the Bárány Society Ad Hoc Committee on Vestibular Rehabilitation Therapy*. J Vestib Res. 2009; 19:15-20.

4. Cohen HS, Gottshall KR, Graziano M, Malmstrom EM, Sharpe MH, Whitney SL. *International guidelines for education in vestibular rehabilitation therapy.* J Vestib Res. 2011;21(5):243-250.

5. Colledge NR, Wilson JA, Macintyre CC, MacLennan WJ. *The prevalence and characteristics of dizziness in an elderly community.* Age Ageing. 1994;23(2):117-120.

6. Ferri N, Morone G, Piermaria J, Manzari L, Turolla A, De Tanti A, et al. *Knowledge, barriers, and future directions of vestibular rehabilitation practice in neurorehabilitation: an Italian survey.* Healthcare (Basel). 2025;13(1):22.

7. Galgon AK, Roberts HJ, Littmann AE, Heusel-Gillig LL, Dransfield L, Plishka CM, et al. *A survey of entry-level physical therapy education content for vestibular rehabilitation.* J Phys Ther Educ. 2022;36(1):65-75.

8. Meldrum D, Burrows L, Cakrt O, Kerkeni H, Lopez C, Tjernstrom F, et al. *Vestibular rehabilitation in Europe: a survey of clinical and research practice.* J Neurol. 2020;267(Suppl 1):24-35.

9. Naber CM, Water-Schmeder O, Bohrer PS, Matonak K, Bernstein AL, Merchant MA. *Interdisciplinary treatment for vestibular dysfunction: the effectiveness of mindfulness, cognitive-behavioral techniques, and vestibular rehabilitation*. Otolaryngol Head Neck Surg. 2011;145(1):117-124.

10. Neuhauser HK. *Epidemiology of vertigo.* Curr Opin Neurol. 2007;20(1):40-46.

11. Neuhauser HK. *The epidemiology of dizziness and vertigo*. Handb Clin Neurol. 2016; 137:67-82.

12. Neuhauser HK, von Brevern M, Radtke A, Lezius F, Feldmann M, Ziese T, et al. *Epidemiology of vestibular vertigo: a neurotologic survey of the general population.* Neurology. 2005;65(6):898-904.

13. Rodriguez AI, Zupancic S, Song MM, Cordero J, Nguyen TQ, Seifert C. *Importance of an interprofessional team approach in achieving improved management of the dizzy patient*. J Am Acad Audiol. 2017;28(3):177-186.

14. Spiegel R, Rust H, Baumann T, Friedrich H, Sutter R, Göldlin M, et al. *Treatment of dizziness: an interdisciplinary update*. Swiss Med Wkly. 2017;147: w14566.

15. Thorman IB, Schrack JA, Schubert MC. *Epidemiology and comorbidities of vestibular disorders: preliminary findings of the AVOCADO study.* Otol Neurotol. 2024;45(5):572-579.

16. van de Berg R, Murdin L, Whitney SL, Holmberg J, Bisdorff A. *Curriculum for Vestibular Medicine (VestMed) proposed by the Bárány Society: the concept of Vestibular Medicine and the framework defining the knowledge, skills and attitudes needed for proficiency in Vestibular Medicine*. J Vestib Res. 2022;32(2):89-98.

17. Wiener-Vacher SR, Quarez J, Priol AL. *Epidemiology of vestibular impairments in a pediatric population.* Semin Hear. 2018;39(3):229-242.

18. Wojtczak R, Narożny W, Kuczkowski J, Siebert J. *Epidemiology of dizziness in northern Poland: the first Polish neurootologic survey of the general population.* Ann Agric Environ Med. 2017;24(3):502-506.

19. Yardley L, Owen N, Nazareth I, Luxon L. *Prevalence and presentation of dizziness in a general practice community sample of working age people.* Br J Gen Pract. 1998;48(429):1131-1135.

Positive opinion from the Bioethics Committee at the Medical University of Warsaw (AKBE/223/25)

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