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Research Article

Chronic Dizziness and Positional Symptoms: An Exploration of Symptom Clusters and Participant-Reported Experiences

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ABSTRACT

Purpose: This mixed-methods design (a) quantitatively describes the symptom cluster assignments of patients with chronic dizziness who completed a dizziness triage questionnaire and (b) qualitatively explains patient-reported themes associated with the most frequently assigned symptom cluster.
Method: A retrospective hybrid explanatory mixed-methods design was implemented to examine an artificial intelligence dizziness triage questionnaire posted online in a vestibular disorders support group from June 2021 to November 2022. Symptom cluster assignments are described in 791 participants. In the qualitative analysis, emerging codes were identified in the dominant symptom cluster in 50 participants.
Results: Quantitative analysis identified a total of 301 symptom cluster combinations. The analysis from 791 participants revealed that females exhibited more symptom clusters than males, age impacted symptoms inversely, and longer duration of symptom history exhibited more symptom clusters. "Positional" was the most common symptom cluster among 50 participants. Of those 50, six major themes emerged from the data: (a) physical symptoms, (b) cognitive symptoms, (c) triggers, (d) temporal information, (e) management, and (f) emotions.
Conclusions: The results from this study emphasize the complexity and variability of chronic dizziness. Comprehensive patient assessments that combine questionnaires with clinical expertise and patient dialogue are needed to improve diagnosis and management.

Dizziness is the third most common complaint in primary care settings and consistently accounts for 2%–3% of emergency department demands in 1 year (Bösner et al., 2018; Kroenke & Mangelsdorff, 1989; Newman-Toker et al., 2008). Growing evidence suggests that it is not uncommon for patients with dizziness to receive misdiagnoses from emergency department care (Kerber & Newman-Toker, 2015; Royl et al., 2011). This underscores the significant impact dizziness has on both patients and health care systems and the need for access to specialized care and increased diagnostic precision (Staab & Ruckenstein, 2007).

Dizziness is a common symptom, yet it is nonspecific. It can stem from a wide range of underlying health issues, making diagnosis challenging. The issue is further complicated by multimorbidity, a situation where patients have several coexisting conditions that can all contribute to their problem (Agrawal et al., 2009; Bösner et al., 2018; Teggi et al., 2016). Efforts have been made to categorize patients into groups that assist in triage and treatment decision-making according to needs based on complaints (Jacobson et al., 2019; Zhao et al., 2011).

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This study explores the results of DizzyGuide, an online triage program. DizzyGuide was developed by the Mayo Clinic in Rochester, Minnesota, to streamline appointment scheduling for patients experiencing dizziness. The program gathers information through a questionnaire, including demographics, medical history, and details about the patient's dizziness. Based on these answers, DizzyGuide generates "symptom clusters." Symptom clusters suggest potential diagnoses related to dizziness and instability. Clinicians can use this information to indicate the type of testing or health care provider most suited to the patient's needs (Friedland et al., 2016). The questionnaire algorithm does not have self-learning capabilities and is under the supervision of human input. If the symptom cluster is not found to be appropriate during review, clinical judgment acts as a manual correction to refine the approach to assessment and diagnosis. For example, if a patient was assigned to both Ménière's disease and semicircular canal dehiscence clusters but their history is only consistent with Ménière's disease, the clinician would prioritize an assessment tailored to Ménière's disease (Goulson & McCaslin, 2021).

In the current study, DizzyGuide was completed by volunteers recruited from the Vestibular Disorders Association (VeDA), a web-based support community primarily composed of people with chronic dizziness. The purpose of the study was to describe the symptom cluster groups identified using the DizzyGuide algorithm and to qualitatively analyze the open-ended text to better understand how patients perceived their symptoms. Due to the limited research in this area, it is difficult to formulate a specific hypothesis about chronic dizziness and symptom cluster analysis. However, given what is known about patients with chronic dizziness, we tentatively hypothesized that participants with chronic dizziness would demonstrate extended periods of symptom duration and complex symptom cluster structures.

Method

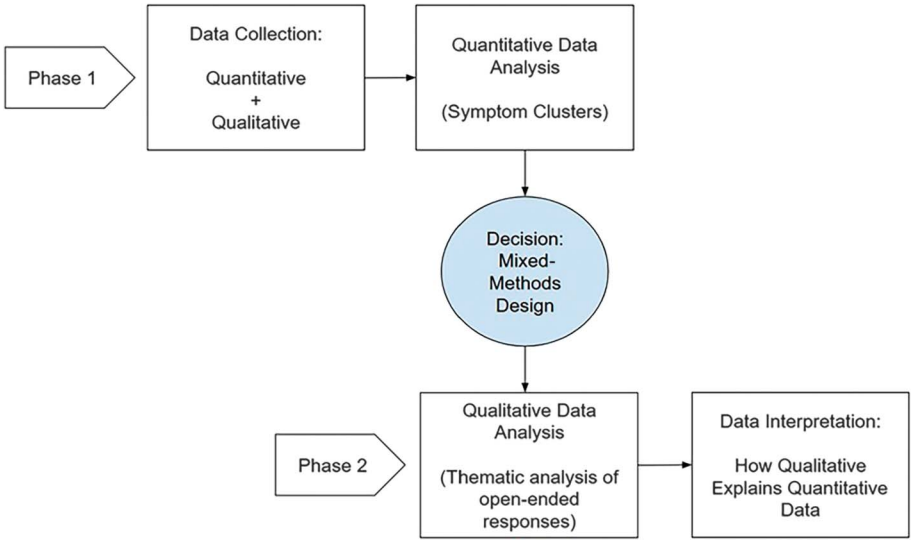
As this was a retrospective analysis of preexisting data received by DizzyGuide, informed consent was not required. All participant identifiable information was de-identified prior to receiving the data to protect privacy. The study protocol was received and approved by the James Madison University Office of Research Integrity Institutional Review Board in Harrisonburg, Virginia (Protocol 23-3892).

Participants from an online balance disorder support group, VeDA, were invited to complete the DizzyGuide questionnaire through an e-mail newsletter. The questionnaire consisted of 56 items in various formats: multiple choice (22 items), check all that apply (22 items), and open-ended question (four items). No skip or forced-choice logic was applied, meaning that each question was presented and participants could omit an answer. Following this, data were de-identified and received for analysis. A hybrid explanatory mixed-methods research approach was implemented to understand and explain symptom clusters in participants who experience dizziness. This design is traditionally characterized by its sequential collection and analysis of quantitative and qualitative data, respectively, and its ability to connect the two modes of data (Creswell, 2002). However, we defined this as a hybrid approach because data were collected concurrently and analyzed in two consecutive phases (Creswell, 2002; Ivankova et al., 2006). A convergent research design was not appropriate because data analysis was not initially met with the intent for triangulation, and this intention is a crucial feature of this type of design (Creswell, 2002). Instead, qualitative data in this study were treated as a post hoc analysis in the most frequently occurring symptom cluster (refer to Figure 1).

Phase 1 comprised a quantitative analysis to describe the population and its symptom cluster frequencies. After completing the questionnaire, a proprietary algorithm used by DizzyGuide was applied resulting in participants assigned to one or more of 11 symptom clusters, allowing for 2,048 (2^{11}) possible cluster combinations. Symptom clusters include positional, Ménière's, visual, migraine, anxiety and depression, falls, superior canal dehiscence, persistent dizziness, degenerative dizziness, concussion, and ear pain. Refer to Table 1 for symptom cluster descriptions.

To investigate potential differences in symptom counts across the various demographic variables, a Poisson regression model was fit to the data. This approach is ideal because the response variable involves counts, and the objective is to determine the relationship between multiple predictors and symptom cluster counts. In an effort to allow for more substantively meaningful interpretations of parameter estimates, the demographic variables were recoded as follows. First, age was collapsed from a nine-category variable (i.e., under 13, 13–19, 20–39, 40–49, 50–59, 60–69, 70–79, 80–89, and over 90 years) into three distinct categories (i.e., younger than 50 years of age, aged 50–79 years, and 80 years or older). This choice was made for two primary reasons: (a) small sample sizes in certain categories (e.g., $n = 4$ respondents indicated an age over 90 years) and (b) to allow for clinically meaningful comparisons (i.e., likely unimportant to compare those aged 80–89 years with those older than 90 years, thus combine into a single group). We chose to use those aged 50–79 years as the reference group. Sample sizes for the age groups were as follows: younger than 50 years of age, $n =$

Figure 1. Diagram of the hybrid explanatory mixed-methods design.



119 (of which 79.0% female); aged 50–79 years, $n = 582$ (of which 89.9% female); and 80 years or older, $n = 81$ (of which 60.5% female). Next, gender was coded such that estimates for female and other were in comparison to male, the reference group. Finally, duration of symptoms was rescaled from days to months (e.g., an individual who reported experiencing dizziness symptoms for 365 days would be coded as having experienced 12 months of symptoms). The Poisson regression model was fit using maximum likelihood estimation with robust standard errors (i.e., Huber-White/sandwich). To further improve the interpretability of parameter estimates, the log-coefficients were exponentiated, transforming estimates to incidence rate ratios (IRRs), in which IRR values of > 1 indicate an increased rate for a particular group in comparison to another, while IRR values of < 1 indicate a decreased rate. All analyses were conducted using R Version 4.3.1 (R Core Team, 2023).

Phase 2 comprised a qualitative analysis that was implemented after identifying the most assigned symptom cluster, positional ($n = 50$). We were initially surprised

Table 1. Symptom cluster descriptions.

Symptom cluster	Description
Positional	Recurrent episodes of vestibular symptoms triggered by changes in head position. Timing, triggers, and associated symptoms were primarily focused on identifying benign paroxysmal positional vertigo.
Ménière's	Recurrent spontaneous episodes of vestibular symptoms that were associated with changes in hearing, tinnitus, aural fullness, and episodic vertigo. Vertebrobasilar transient ischemic accidents were ruled out with magnetic resonance imaging and head and neck magnetic resonance angiography.
Visual	Chronic symptoms were exacerbated when the patient was exposed to visual motion, visual complexity, and visual precision tasks.
Migraine	Recurrent spontaneous episodes of vestibular symptoms that were associated with features of vestibular migraine
Anxiety and depression	Chronic symptoms associated with coexisting psychiatric disorders.
Falls	Unexplained falls.
Superior canal dehiscence	Recurrent episodes of vestibular system triggered by loud sounds, increases in intracranial pressure, and the presence of autophony.
Persistent dizziness	Chronic nonspecific vestibular symptoms.
Degenerative dizziness	Gait and coordination that progressively worsens over time—potentially nonvestibular cause.
Concussion	Vestibular symptoms that follow a head injury.
Ear pain	Reports of unilateral or bilateral otalgia.

that a group of patients reporting longstanding symptoms clustered around "positional" given that most positional dizziness is considered acute and/or episodic. For this reason, a qualitative approach was used and served as a post hoc analysis focused on the open-ended answers patients provided. The qualitative analysis identified emerging themes in symptom descriptions by the participants in the positional cluster within a constructivist approach. The constructivist approach acknowledges that these reports are understood through the lens of the participants' engagement with their world and experiences and then crafted into meaning-making (Pouliot, 2004). Participants were asked to identify and "describe their problem" in an open-box response. Two authors (B.L.H. and E.G.P.) independently generated and agreed upon themes using a grounded theory coding technique. Grounded theory allows encoders to identify and label common patterns of themes and categories among participant responses to derive meaning of their experience (Charmaz, 1990). Experiences and interpretations of the data were compared and discussed to create six mutually exclusive themes: positional symptoms, cognitive symptoms, triggers, temporal information, management, and emotions. All 50 responses were then coded independently by the primary author and reviewed by an independent coder for triangulation to account for dependability or consistency (Krefting, 1991). Coding allowed for multiple themes per participant response.

Results

Phase 1: Quantitative Analysis

A total of 894 de-identified participant responses were obtained from June 2021 to November 2022. Of these, 103 participants did not complete the questionnaire and were excluded from the analysis. The remaining 791 participant responses were analyzed. The demographic distribution of participants was predominantly female (n = 616, 77.9%), with a smaller representation of males (n = 166, 21%) and a minimal number of those who identified as other (n = 9, 1.1%). Age distribution showed a higher concentration in 70–79 years (n = 232, 29.3%) and 60–69 years (n = 225, 28.4%), followed by 50–59 years (n = 131, 12.6%), 80–89 (n = 77, 9.7%), 40–49 years (n = 71, 9%), and 20–39 years (n = 48, 6.1%). The least represented age groups were those over 90 years (n = 4, 0.5%), 13–19 years (n = 2, 0.3%), and under 13 years (n = 1, 0.1%). The median duration of symptom experience was 1,264 days, with an interquartile range (IQR) of 3,174 days. When examining the duration of symptoms by gender, data showed a median of 1,294 days (IQR = 3,149) for females, 1,127 days (IQR = 2,582) for males, and 2,093 days (IQR = 1,976) for individuals identifying as other.

The Poisson regression requires specific data formats. Therefore, the descriptive information in our study was recoded to meet these requirements. Table 2 notes the specific transformation applied to the data. Poisson regression results, detailed in Table 3, indicated that, on average, females had significantly more symptoms than males (IRR = 1.228, p = .002). Specifically, this can be interpreted as the rate of symptoms among females being 1.228 times greater than the rate of symptoms among males. Additionally, Figure 2 provides a graphical illustration of the Poisson regression outcomes. There were no differences in symptom counts between males and other. Regarding age, on average, those who were 80 years of age or older had significantly fewer symptom counts than those aged 50–79 years (IRR = 0.813, p = .020). Oppositely, those who were younger than 50 years of age had significantly more symptom counts than those aged 50–79 years (IRR = 1.352, p < .001). Finally, those with a longer history of dizziness had significantly more symptoms (IRR = 1.001, p = .002).

Analysis of symptom clusters revealed that most respondents fell into one to three distinct groups. Notably, two-cluster combinations were the most common, accounting for 20.4% of participants. A smaller portion of the

Table 2. Sample demographics for Poisson regression.

	Male (n = 166)		Female (n = 616)		Other (n = 9)		Total	
Variable	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***
Symptom cluster count	2.37	1.83	3.14	2.06	2.89	2.15	2.97	2.04
Months with symptoms	75.38	106.68	93.99	126.70	79.18	64.16	89.87	122.36
Age (years)	*n*	%	*n*	%	*n*	%	*n*	%
49 or younger	12	7.23	107	17.37	3	33.33	119	15.22
50–79	122	73.49	460	74.68	6	66.67	582	74.42
80 or older	32	19.28	49	7.95	0	0.00	81	10.36

Table 3. Poisson regression results of symptom counts.

Variable	IRR	*p*	95% CI	
Age (reference: 50–79 years)				
49 years or younger	1.342	< .001	0.177	0.412
80 years or older	0.812	.019	−0.382	−0.034
Gender (reference: male)				
Female	1.228	.002	0.077	0.335
Other	1.137	.634	−0.401	0.658
Months with symptoms	1.001	.002	0.001	0.001

Note. IRR = incidence rate ratio; 95% CI = 95% confidence interval.

sample experienced up to nine (1.0%). Figure 3 displays 34 of the 301 cluster combinations, where categories include five or more respondents, as showing all 301 combinations would have been challenging. Seven hundred twenty-seven participants collectively fell into the following clusters: positional (n = 392), Ménière's (n = 356), visual (n = 302), migraine (n = 260), anxiety (n = 248), ear pain (n = 177), falls (n = 173), semicircular canal dehiscence (n = 139), persistent dizziness (n = 121), degenerative dizziness (n = 112), and concussion (n = 71). Positional appeared most frequently, both in symptom cluster assignment alone (n = 50) as well as across all combinations (n = 392). Among males, the three leading symptom cluster combinations included (a) positional (n = 75, 45.2%), (b) Ménière's (n = 73, 44.0%), and (c) falls (n = 43, 25.9%). Among females, the three leading symptom cluster combinations included (a) positional symptoms (n = 314, 51.0%), (b) Ménière's symptoms (n = 278, 45.1%), and (c) visual vertigo symptoms (n = 263, 42.7%). The study identified and excluded 64 participants assigned to no cluster.

The positional symptom cluster showed a predominance of females (n = 37, 74%) compared to males (n = 13, 26%). The age distribution leaned toward older adults, with the highest frequencies in the 70–79 years (n = 17, 34%), 60–69 years (n = 15, 30%), and 50–59 years (n = 11, 22%). Fewer participants fell into the age groups of 20–29 years (n = 3, 6%), 40–49 years (n = 3, 6%), and 80–89 years (n = 1, 2%). This cluster's median duration of symptoms was 727 days, with a wide IQR of 4,900 days.

Phase 2: Qualitative Analysis

"Positional" emerged as the most common symptom cluster assigned to participants (n = 50). Each of the 50 participants responded to the prompt "Describe your problem." Of those, six broad themes emerged. Figure 4 demonstrates physical symptoms as the most common theme (89 occurrences), followed by triggers (58 occurrences), temporal information (25 occurrences), management (15 occurrences), cognitive symptoms (seven occurrences), and emotions (six

Figure 2. Poisson regression of symptom counts across age and gender.

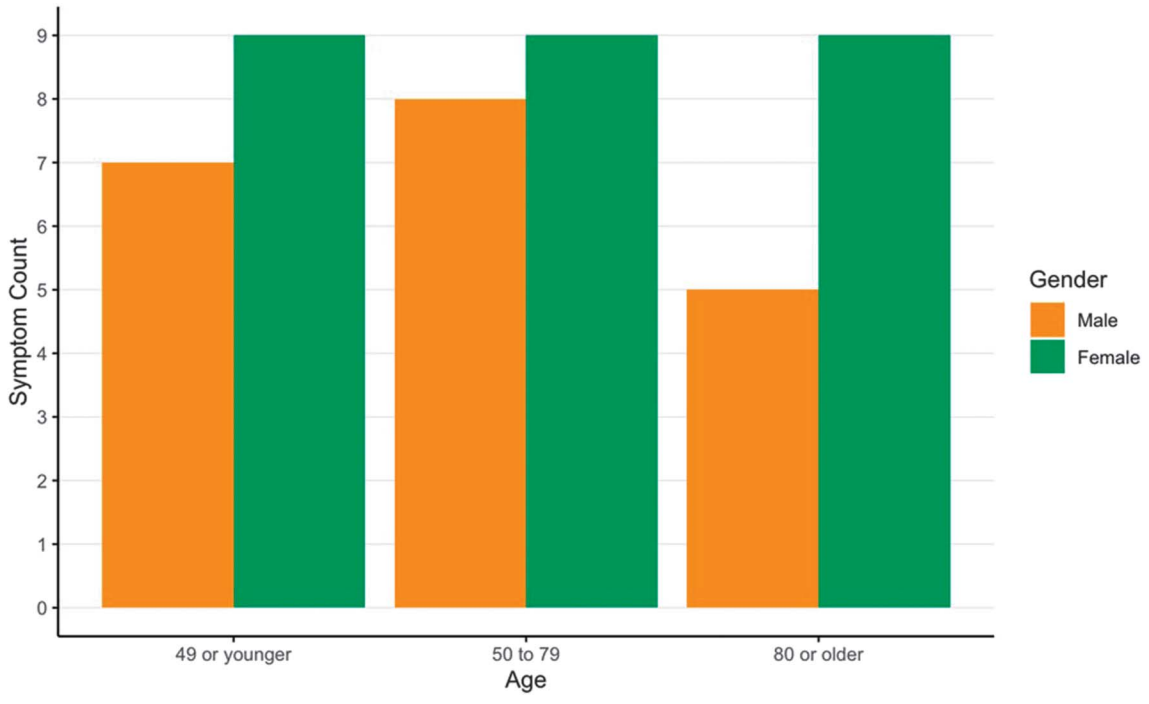
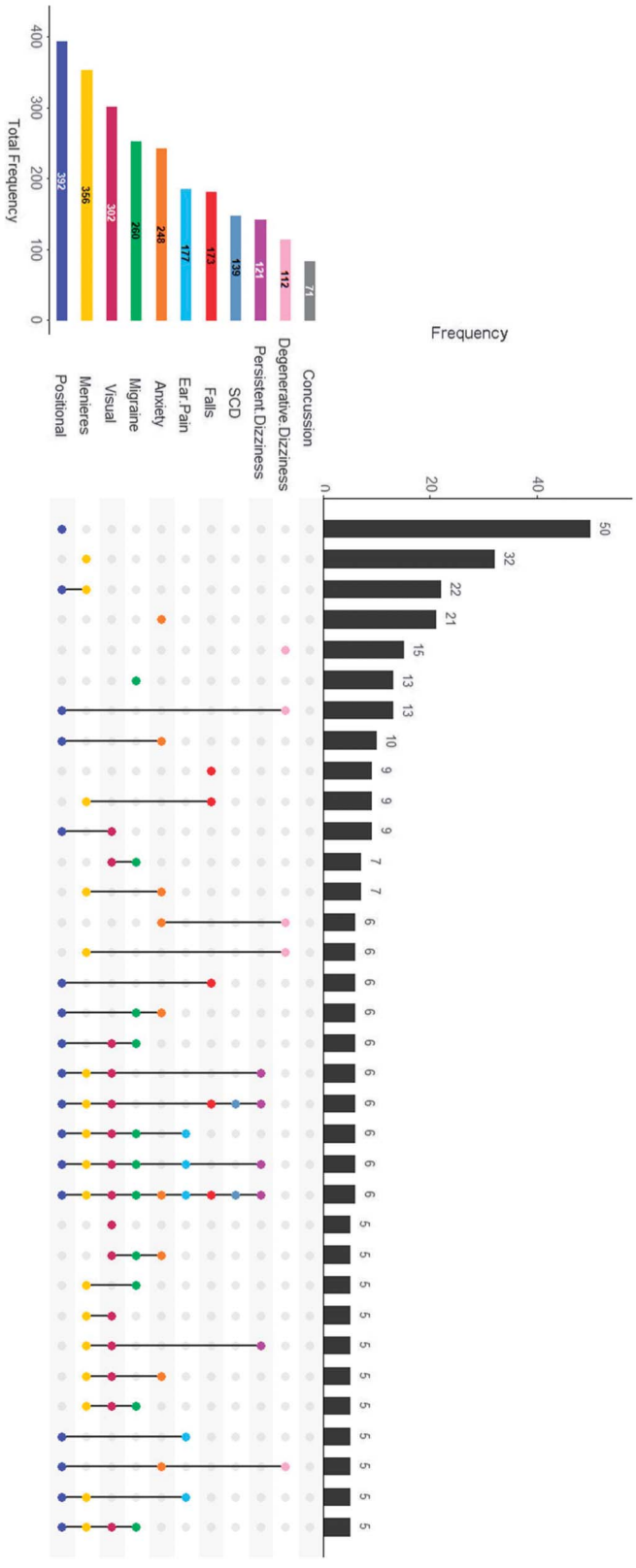


Figure 3. R upset plot displaying 34 of 301 symptom cluster assignments ($n \geq 5$).



occurrences). Table 4 further elaborates on these themes, including definitions and quotes.

The following sections describe and extract each theme by number of occurrences, respectively. There is limited space to discuss all prevalent codes.

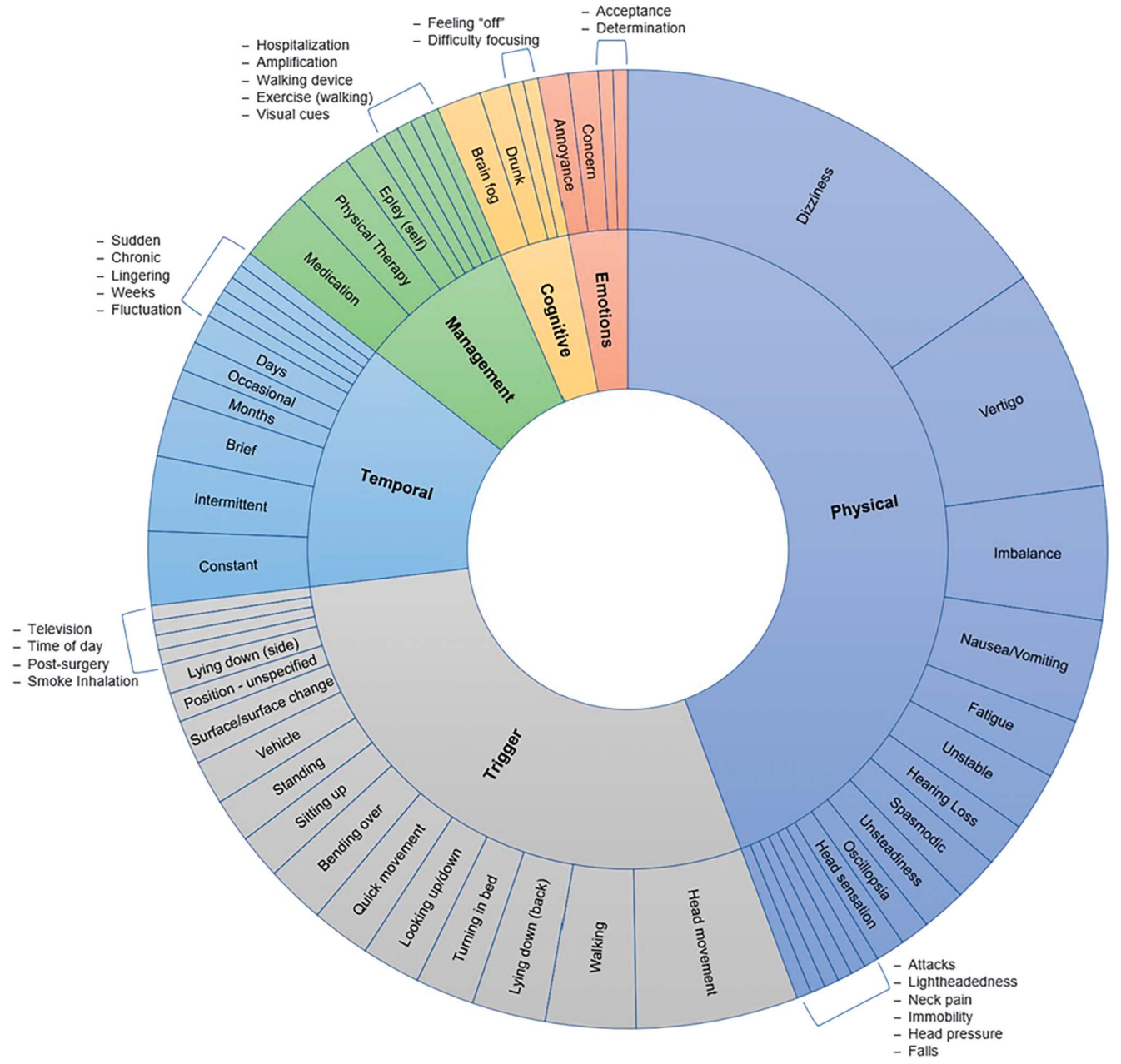
Physical Symptoms

Eighty percent of participants reported physical symptoms (n = 40). Dizziness emerged as the dominant physical symptom described by 26 participants, with 31 occurrences. Spinning or description of rotary vertigo occurred frequently (15 occurrences), described as sensations of their environment or stationary objects turning around them. A subset of the sample delineated issues with balance (nine occurrences), describing experiences ranging from general disequilibrium to acute disturbances. One participant detailed an onset of imbalance following a transient ischemic attack in 2021. Nausea and vomiting were noted in conjunction with symptoms of dizziness and vertigo (seven occurrences). Reports of fatigue were less common but still noteworthy (four occurrences), as one participant described sleeping for an entire day following an episode of dizziness. Other less frequent physical symptoms reported included instability (four occurrences) and unsteadiness (three occurrences), hearing loss (three occurrences), spasmodic symptoms or tremors (three occurrences), oscillopsia (two occurrences), unspecified head sensation (two occurrences), lightheadedness (one occurrence), neck pain (one occurrence), immobility (one occurrence), head pressure (one occurrence), falls (one occurrence), and mention of attacks (one occurrence).

Triggers

Nearly half of the participants (n = 24) named multiple triggers in their descriptions. Triggers were predominated related to positional or movement-induced stimuli. Head movements were the most commonly reported trigger (11 occurrences), followed by walking (six occurrences), lying down on their back (five occurrences), bending over/forward (four occurrences), looking up or down (four occurrences), quick movements (four occurrences), turning in bed (four occurrences), standing (three occurrences), sitting up (three occurrences), vehicular movement (three occurrences), lying down on their side (two occurrences), and unspecified position changes (two occurrences). Triggers not directly related to movement were less commonly reported but present. Changes in surface were reported by two participants, where one participant described exacerbated imbalance when the ground was uneven. Singular reports of triggers included movements on a television screen, postsurgical effects following the removal of an acoustic neuroma, time of day, and exposure to smoke.

Figure 4. Graphic representation of emerged themes and corresponding codes from the "positional" cluster.



Temporal Information

Thirty-four percent of the participants provided a broad spectrum regarding the patterns of onset and timing of symptoms. The most frequently reported temporal characteristics were "constant" and "intermittent," each noted with five occurrences. Other descriptions of temporal information included "brief" with four occurrences and "months," "occasional," and "days" each reported on two occasions. Singular reports of temporal information included "weeks," "chronic," "lingering," "sudden," and "fluctuating." In some cases, multiple temporal characteristics were described within a single individual. For instance, one person expressed, "I am dizzy all the time, more or less, going on 6 years now. I had two bouts of severe vertigo that lasted 6 months and then lingered but improved." For others, their problem appeared with a single temporal trait.

Management

As part of the description of their problem, nine individuals discussed management techniques and strategies

Table 4. Themes, definitions, and representative quotations in response to the open-ended prompt: "Describe your problem."

Themes	Definitions	Quotes
Physical symptoms	Any changes or abnormalities in the body that can be sensed or observed. Included terms such as *vertigo, imbalance, headaches, nausea, vomiting.*	"Lightheaded and neck pain." "Bed turns around nonstop with me." "Profound hearing loss in my right ear."
Cognitive symptoms	Any changes in the way the person thinks, learns, remembers, and makes decisions. Included terms such as *difficulty concentrating, memory problems, anxiety, depression.*	"Feeling 'off.'" "Brain fog." "Hard to focus."
Trigger	Any factors that can worsen or initiate/trigger symptoms (physical or cognitive). Included terms such as *head turns, rolling over in bed, and environmental changes.*	" . . . turning my head to the left in certain positions." "Can't look up or down very fast." " . . . bending over forward to wrap bath towel around hair."
Temporal information	Pattern or the timing of episodes. Included terms such as *intermittent, every day, lasts a few seconds.*	"Brief bouts. . . . " "Tends to continue for a number of days/weeks." "Happens once in a while."
Management	Any planning, adjustment, or change/modification of behavior in response to external or internal changes. Included terms such as *medication, physical therapy, avoiding activities.*	"I've been to a PT [physical therapist] a few years ago and it helped and I do some of the exercises." "I've been wearing a hearing aid which helps with balance."
Emotions	Feelings, reactions, or mood derived from lived experiences with their condition. Included terms such as *loneliness, frustration, acceptance*.	"I've learned to live with the problem." "I just know that it is very disconcerting."

tailored to their specific symptoms. Medication was the most common form of management, including antihistamines, benzodiazepines, and antibiotics (five occurrences). Clinician-administered physical therapy was identified as the second most common, including vestibular rehabilitation with the implementation of Epley-type maneuvers with varying degrees of success (four occurrences). Two participants described self-administration of the Epley maneuver, also with mixed outcomes. Singular reports of management included hospitalization, improved mobility with a walking device, regular walking as exercise, the effectiveness of focusing on distant visual cues, and hearing aids to aid in the reduction of symptoms.

Cognitive Symptoms

Six participants reported experiencing cognitive symptoms in their descriptions. Brain fog, a general description characterized by mental clarity, was explicitly most often (three occurrences). The sensation of being drunk (two occurrences) was the second most common complaint, encapsulating their experience with phrases such as "feels like I've had eight beers." The sensation of "feeling off" and "difficulty focusing" each occurred once in the analysis. This theme uniquely spanned across those experiencing symptoms for 106 days or longer, distinguishing it from the other themes where reports ranged from as brief as 1 day to as extensive as 60 years.

Emotions

Although less frequently described, we recognized the importance of emotional responses (six occurrences). Participants expressed a range of emotions, encompassing both positive and negative aspects. Concern was a notable sentiment with two occurrences, with the participant expressing, "I get a response. I just know that it is very disconcerting." Annoyance emerged from two participants, reflecting on the irritation experienced by their persistent symptoms. One participant expressed determination, specifically a desire to reduce the impact of their problem, another participant acknowledged acceptance in a statement, "I have learned to live with the problem."

Discussion

As tentatively hypothesized, participants with chronic dizziness displayed extended periods of symptom duration and complex symptom cluster structures. Furthermore, the Poisson regression identified that a longer history of dizziness correlated with an increased number of symptom clusters. With a median symptom duration exceeding 3 years and 301 symptom cluster combinations, results emphasize the persistent and complex nature of chronic dizziness (Cornforth & Schramm, 2024; Gassman et al., 2009; Staab & Ruckenstein, 2007). Findings also indicate that age and the duration of experiencing dizziness play a role in the number of symptom clusters. Younger individuals (under 50 years of age) were assigned to more symptom clusters. In contrast, older adults aged 80 years and older showed fewer symptoms, possibly indicating reduced central plasticity and blunting of symptoms with aging (Piker et al., 2013). Further research is needed to explore this phenomenon more comprehensively. The demographic distribution

was skewed toward females and older adults, consistent with existing population studies regarding chronic dizziness (Gassmann et al., 2009; Jang et al., 2024; Neuhauser, 2016).

The study identified and excluded 64 participants assigned to no cluster. The precise reasons for nonalignment with any symptom cluster remain unclear. It is hypothesized that the questionnaire's algorithm assumed these responses to be unrelated to the vestibular system (e.g., cardiovascular). More than half of the participants were assigned to positional symptom clusters either alone or in combination with other clusters. Both the positional symptom cluster definition and participant descriptions aligned with DizzyGuide's positional symptom cluster definition as well as studies by Oh et al. (2015) and Staab and Ruckenstein (2007), indicating that patients suffering from chronic dizziness report symptoms acutely exacerbated by positional changes. The inclusion of a qualitative phase was not originally planned but provided significant insights into how chronic patients were defining and describing positional symptoms. The hybrid-explanatory design used in this study is less common but strengthens qualitative and quantitative data with an integrated approach. Future research should explore narrative medicine in chronic dizziness to empower patients to navigate their unique experiences. This path seeks to place the patient narrative at the heart of audiology practice.

Chronic dizziness is not limited to a sensation of rotary vertigo. It can also manifest as imbalance, disorientation, and increased sensitivity to motion. Such stimuli may include quick changes in the head or body position, involved visual patterns, or rapid movements within the surrounding environment. These are evident in the physical symptoms that emerged in our qualitative analysis.

A high degree of variability was revealed in how participants described the timing and pattern of their dizziness. The most common descriptors were "constant" and "intermittent." This finding highlights the heterogeneity of chronic dizziness, even within a specific symptom cluster. It suggests that the group of 50 individuals classified under positional was not homogeneous. Understanding the temporal aspects of dizziness can be crucial for diagnosis and treatment planning. Further research is needed to explore the underlying mechanisms contributing to these variations in symptom timing.

Fewer participants reported the emotional impacts of their problem. Patients may choose to withhold emotional experiences associated with symptoms due to fear of stigma. Research indicates that individuals often worry about being judged or misunderstood when discussing emotions but are more likely to disclose when they perceive health care providers as empathetic and genuinely concerned about their well-being (Hoyt et al., 2010; Keller et al., 2016). The pathophysiology of chronic dizziness is hypothesized to involve complex interactions between vestibular, neurological, and psychogenic features (Ochiai, 2023). The interplay of these factors can lead to a sustained cycle of symptom experience, where psychological components such as anxiety, depression, and fear may both contribute to and exacerbate the perception of dizziness and imbalance (Ferreira et al., 2012; Teh & Prepageran, 2022). This limitation renders future research to explore emotional domains and implement this information as a portion of the case history collection.

Even in the presence of a well-structured case history, chronic dizziness presents a distinct challenge (Sloane et al., 2001). Defined by symptoms that persist for extended periods, often months or years, it can significantly impact daily life (Smirnova et al., 2011). Walking, driving, or standing can become difficult or frightening (Agrawal et al., 2009; Bösner et al., 2018; Kollen et al., 2017; Teh & Prepageran, 2022). This persistent disruption to daily routines can lead to social isolation, anxiety, and depression (Cheng et al., 2012; Ciorba et al., 2017).

This study is a first step in understanding how patient triage questionnaires can be used to explore and improve the diagnosis and management of chronic dizziness. Despite the numerous benefits of tests and medical imaging available, collecting a thorough and accurate case history remains paramount for differentiating between or when suspecting a multiplicity of overlapping diagnoses (Kroenke & Mangelsdorff, 1989; Zhu et al., 2019). Efficient assessment and management of dizzy patients is crucial, given its prevalence in primary care and frequent misdiagnoses in emergency settings (Bösner et al., 2018; Kerber & Newman-Toker, 2015). DizzyGuide was not fully realized in this patient population, and those with complex symptom clusters require more than what primary care and emergency settings can provide. Patients presenting with complex symptom clusters and long-standing positional symptoms require an approach centered on the irreplaceable value of thorough clinical assessment and dialogue. A discordance exists between how clinicians and patients define "positional," as revealed in our findings. Clinicians typically categorize positional dizziness based on acute criteria, excluding these symptoms from studies because they are not considered conventionally chronic (Vermorken et al., 2024). By not addressing positional symptoms in this population, we fail to capture the nuances of the condition. This highlights the limitations of quantitative measurement and begs a collective reflection on the role of questionnaires and algorithms and whether they serve the patients' needs or simplify complexities for convenience. This resonates with the World Health Organization's (WHO) International Classification of Functioning, Disability and Health (ICF) framework. The ICF framework emphasizes a holistic view

of health, considering not only pathology but also the patient's activities, participation, and environmental factors (OpenAI, 2023; WHO, 2001).

There are noted limitations in this study design. A sample derived from a support group can suffer from either underrepresentation or overrepresentation within the population (Lopez & Whitehead, 2013). The sample consisted primarily of female and older adult participants, limiting the generalizability of the findings to more diverse populations (Creswell, 2007). This demographic homogeneity underscores the necessity for broader research inclusion. Investigating intersectionality is essential to offering considerate and knowledgeable care (Kirjava et al., 2023).

Data Availability Statement

The data sets generated and/or analyzed during the current study are not publicly available but are available from the third author, Devin L. McCaslin (mccaslin@med.umich.edu), on reasonable request.

Artificial Intelligence Statement

During the preparation of this work, the authors used ChatGPT (OpenAI, 2023) to structure the discussion section and check for grammar and spelling throughout the work. After using this tool, the authors reviewed and edited content as needed.

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