



Dizziness Symptom Type Prevalence and Overlap: A US Nationally Representative Survey

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ABSTRACT

BACKGROUND: The traditional approach to dizziness encourages providers to emphasize the type of dizziness. However, symptom types might substantially overlap in individual patients, thus limiting the clinical value of this approach. We aimed to describe the overlap of types of dizziness using a US nationally representative sample.

METHODS: The 2008 US National Health Interview Survey was examined for prevalence and overlap of types of dizziness. The data were also separately examined among people who otherwise had typical features of traditionally vertigo-based disorders (ie, benign paroxysmal positional vertigo and Meniere's disease). Data analysis also included exploratory factor analysis.

RESULTS: Twelve-month prevalence of problems with dizziness or balance was 14.8%, representing 33.4 million individuals. The mean number of dizziness symptoms was 2.4 (95% confidence interval [CI], 2.3-2.4), with 61.1% reporting more than one type. Of subjects who otherwise had typical features of traditionally vertigo-based disorders, the mean number of dizziness types was 3.1 (95% CI, 3.0-3.3), and only 24.6% (95% CI, 21.0%-28.7%) reported vertigo as the primary type. Exploratory factor analysis found that symptom types loaded onto a single factor without other clinical or demographic variables.

CONCLUSIONS: Substantial overlap of dizziness types exists among US adults with dizziness. People otherwise having features of traditionally vertigo-based disorders also typically report multiple dizziness types and do not typically report vertigo as the primary type. Symptom types correlate more strongly with each other than with other clinical or demographic variables. These findings suggest that the traditional emphasis on dizziness types is likely of limited clinical utility.

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INTRODUCTION

The traditional approach to the evaluation of dizziness emphasizes the type of dizziness symptom (eg, vertigo, lightheadedness, off-balance) when formulating the differential diagnosis and making clinical decisions.^{1,2} Even recently, the type of dizziness is emphasized as a key component to

the diagnostic criteria for benign paroxysmal positional vertigo and Meniere's disease.³⁻⁶

Despite this, previous studies indicate that dizziness patients typically provide vague descriptions, select multiple types of dizziness, and are not reliable in selecting the primary type of dizziness.⁷ Additionally, patients with peripheral vestibular disorders often do not report vertigo and patients with orthostatic intolerance, syncope, and panic disorders often do.⁷⁻⁹ These studies, however, are limited by single-center designs, focused health care settings, and small samples. Therefore, larger and more generalizable studies are needed.

In this study, we use information from a US nationally representative sample of noninstitutionalized adults to describe individuals' reports of types of dizziness, the overlap among

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the various types, and also the types reported specifically by people who otherwise have typical features of traditionally vertigo-based disorders (ie, benign paroxysmal positional vertigo and Meniere's disease). This information has important implications for health care provider evaluation and management decisions and also for patient-oriented resources and research.

METHODS

We used the 2008 National Health Interview Survey (NHIS).¹⁰ NHIS is an annual survey of the health of the US civilian, noninstitutionalized population conducted by the National Center for Health Statistics. The NHIS collects self-reported health and sociodemographic information on each member of the family surveyed and additional information on one randomly selected adult. The survey uses a multi-stage clustered sample design. Individual counties or groups of counties comprise primary sampling units. Non-Hispanic black, Asian, and Hispanic populations are oversampled to allow for more accurate national estimates of health for these populations.

The 2008 NHIS included a dizziness and balance supplement. Respondents were asked if, during the past 12 months, they had a problem with dizziness or balance or any of 6 more specific types of dizziness. The specific types of dizziness were: spinning or vertigo; floating, spacy, or tilting sensation; lightheaded without a sense of motion; feeling as if passing out or fainting; blurring of vision when moving head; and off-balance or unsteady. Additional questions were asked about symptom duration, triggers, and associated hearing loss. Respondents were instructed not to include times drinking alcohol when answering these questions.

The NHIS included 28,790 households consisting of 74,236 persons in 29,421 families in 2008. The interviewed sample for the adult component, which required self-response to all questions unless the sample adult was physically or mentally unable to do so, was 21,781 persons 18 years of age and older. The total household response rate was approximately 85%.

We used responses about additional dizziness details to define categories of patients who otherwise have typical features of the traditionally vertigo-based disorders of benign paroxysmal positional vertigo and Meniere's disease. We focused on benign paroxysmal positional vertigo and Meniere's disease so that symptom types could be described among patients for whom established processes of care – the Dix-Hallpike Test and Epley maneuver for benign paroxysmal positional vertigo, and auditory assessments for Meniere's disease – would be relevant. Typical features of benign paroxysmal positional vertigo and Meniere's disease were the

presence of specific positional triggers (ie, rolling over in bed, or looking up or down) and short duration spells/bouts (ie, NHIS categories of <1 minute or 1 minute to <20 minutes).^{4,5} Typical features of Meniere's disease were auditory features of hearing loss in one or both ears that happens around the same time as dizziness, and spell/bout duration of 20 minutes to <24 hours.⁶

CLINICAL SIGNIFICANCE

- 33 million US adults had problems with dizziness in 2008, and most reported multiple types of dizziness.
- Multiple types of dizziness are the norm even among people with other typical clinical characteristics of traditionally vertigo-based disorders.
- Dizziness symptoms are more strongly correlated with each other than with any other clinical variables.
- The symptom-based traditional approach to dizziness is likely of limited clinical utility.

Statistical Analysis

From the 3411 individuals reporting problems with dizziness of any type in the last 12 months, survey-weighted descriptive statistics were calculated.¹⁰ We also used exploratory factor analysis to evaluate the relatedness of the symptom types with the other available demographic and clinical variables, and to explore the extent to which certain symptoms might load onto clinically meaningful latent variables. The advantage of factor analysis in this case is the simultaneous relational assessment of numerous variables. Items included in the analysis were the 6 dizziness symptom types (individuals could have 0-6 dizziness

types) and additional clinical and demographic variables (Appendix, available online) with a plausible a priori relationship to the following dizziness diagnoses: benign paroxysmal positional vertigo, Meniere's disease, vestibular neuritis, orthostatic hypotension, psychiatric, migraine, medication-related, vascular, cardiac nonvascular, and somatoform disorder. A scree plot of the principal factor analysis data was used to determine the number of factors. Promax rotation was used, and factors were interpreted based on item loading of ≥ 0.32 .¹¹ Factor scores were computed at the individual level, and the frequency of symptom types within each factor was calculated for those with the highest quintile factors scores. The frequency of symptoms types was then calculated for the people with the highest quintile scores for each factor to summarize the frequency of symptom types among the various factors. A sensitivity analysis was also performed by repeating the factor analysis using the primary type of dizziness (ie, one type per individual) as indicated by the individual. Excluded from the factor analysis were people reporting constant off-balance/unsteady as the primary type of dizziness ($n = 190$ individuals) because these individuals were not asked many of the other questions about triggers, accompaniments, and duration. Ninety-three percent of the factor analysis sample had complete data for analysis. All analyses were performed using Stata version 14.2 (College Station, Texas).

RESULTS

In 2008, there were an estimated 33.4 million adults (95% confidence interval [CI], 31.7-35.2 million) who experienced

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