
Dizziness in Primary Care

Results from the National Ambulatory Medical Care Survey

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This study utilized data from the 1981 and 1985 National Ambulatory Medical Care Surveys to study dizziness, a frequently troublesome patient problem in family practice. These data indicate that family physicians and general practitioners see nearly 45% of all outpatients with dizziness. In primary care practices (family physicians, general practitioners, and general internists) the frequency of dizziness as a presenting complaint rises steadily with age, so that nearly 7% of patients aged 85 years and older present with that symptom. Women complain of dizziness more frequently than men, with this relationship being particularly prominent in older age categories.

According to primary care physicians who gathered data for the 1981 and 1985 surveys, dizziness was the principal reason for visit (chief complaint) of 2.61% of patients aged 25 years and older (531 recorded encounters). Of these patients, 66.7% were women; 1.5% were hospitalized; 4.4% were referred to specialists; and 89.3% left with a drug prescription. Hypertension was the most frequent diagnosis recorded among these patients who complained of dizziness. Several of the most common diagnoses recorded for these visits (hypertension, diabetes, unspecified dizziness, and coronary arteriosclerosis) differ from common causes of dizziness reported by specialty clinics.

Dizziness is often a perplexing problem for physicians in primary care office practice. Being a symptom, it cannot be measured; it can only be reported by the patient. It can result from dozens of different pathologic processes and diagnoses affecting a number of body systems.¹ A variety of sophisticated laboratory tests can aid in the diagnosis of certain causes of dizziness.^{2,3} Generally, however, when evaluating undifferentiated symptoms such as dizziness, primary care physicians must rely on the history, the physical examination, and on knowledge of clinical epidemiology to narrow a differential diagnosis.^{1,4,5}

Data on the epidemiology of dizziness could aid primary care physicians in evaluating patients. Published studies have not, however, been reported from primary care office practice, where the majority of patients with dizziness are seen. Drachman and Hart's widely quoted study² reported 105 cases from a referral clinic at Northwestern. Two stud-

ies^{6,7} reported case series from emergency departments. Other reports⁸⁻¹⁰ are from specialty clinics in neurology, otolaryngology, or cardiology.

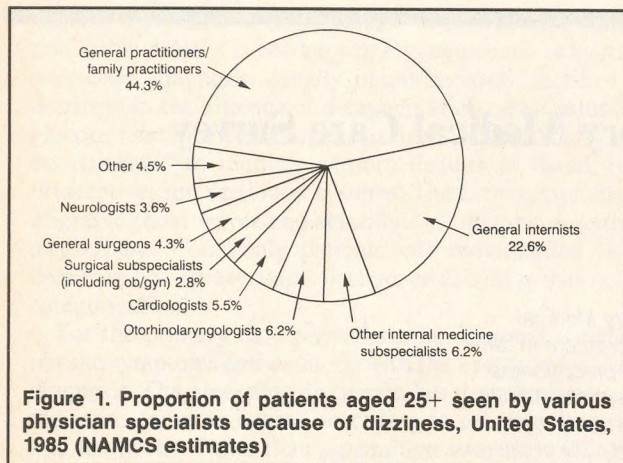
One large office-based study that records both symptoms and diagnoses is the National Ambulatory Medical Care Survey (NAMCS).¹¹ Conducted on a periodic basis by the US National Center for Health Statistics, the NAMCS surveys a sample of practicing physicians in the lower 48 United States. Its primary purpose is to generate national statistics on medical care utilization. Two features of the NAMCS make it particularly suitable for studying dizziness in primary care: (1) it employs the patient encounter as its unit of observation, and (2) it records both presenting symptoms and physician diagnoses for each encounter. This study analyzed data from the 1981 and 1985 National Ambulatory Medical Care Surveys to better characterize the epidemiology of dizziness in primary care office practice.

METHODS

The NAMCS is a periodic survey of patient encounters of medical and osteopathic physicians who provide office-

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based patient care in the United States, excluding Alaska and Hawaii, conducted by the National Center for Health Statistics. The specialties of anesthesiology, pathology, and radiology are excluded; all other medical and surgical specialties are surveyed. The NAMCS employs a multistage probability design, with geographic regions comprising the primary sampling units, and with physicians stratified according to 15 specialty groups. Participating physicians must be office-based, principally engaged in patient care activities, and nonfederally employed; they are selected from master lists kept by the American Medical Association and the American Osteopathic Association. Response rates for the 1981 and 1985 surveys were 77.5% and 70.2%, respectively.

The data-collection instrument (patient record) is a one-page form that is completed for each patient encounter or a designated sample of encounters during the study period. Survey data include demographic descriptors, spaces for recording up to three principal reasons for the visit as stated by the patient and up to three physician diagnoses for the visit, a checklist of several common diagnostic tests, medications prescribed, and the disposition of the patient.

A weight is assigned to each patient record, which permits the calculation of national estimates.^{12,13} Sampling error rates for national estimates based on 1985 NAMCS data decrease as the estimated number of office visits increases; approximate relative standard errors are noted in Appendix I of the 1985 NAMCS documentation manual.¹³

The two most recent surveys were conducted in 1981 and 1985.^{14,15} The 1981 survey contains 43,366 patient records from 1087 participating physicians; the 1985 survey contains 71,594 records from 2879 participating physicians.^{12,13} Both surveys coded up to three "patient's com-

plaint(s), symptom(s), or other reason(s) for *this* visit (in patient's own words)," which were recorded for each patient record by the participating physician. These "reasons for visit" were coded according to a classification system for ambulatory care developed for the NAMCS.^{12,13} Within that coding system symptom S225.0 was defined as "Vertigo-dizziness. Includes: falling sensation, giddiness (dizziness), lightheadedness, loss of sense of equilibrium or balance, room spinning."¹⁶ Together, the 1981 and 1985 NAMCS data contain 31,182 records of visits from patients aged 25 years and older to primary care physicians. Of these, 531 identified dizziness as the principal reason for visit (chief complaint). For purposes of these analyses, primary care physicians were defined as family physicians, general practitioners, and general internists, with general pediatricians added when patients under the age of 25 were included in the analysis.

Two types of analyses were undertaken: (1) development of national estimates, utilizing weighted data from the 1985 NAMCS, and (2) study of unweighted data from individual encounters between primary care practitioners and patients aged 25 years and older whose chief complaint was dizziness. The first set of analyses used data from the 1985 NAMCS to generate national estimates about the prevalence of dizziness among patients seen by various practitioner types and the frequency of dizziness by patient age and sex. Because of the low prevalence of dizziness in patients under the age of 25 years, subsequent analyses focused on adults with the symptom. An additional analysis addressed the relationship between hypertension and dizziness, as hypertension proved to be the most common diagnosis among patients presenting with dizziness. National estimates were obtained by employing the sampling weights assigned to each observation, according to NAMCS guidelines.¹³ Tests of significance, when applied, utilized the chi-square statistic for frequency tables and the Breslow-Day test for homogeneity to assess the significance of statistical interaction in stratified analyses.^{17,18}

The second series of analyses addressed the characteristics of those specific patient encounters in which dizziness was identified by primary care physicians as the principal reason for visit. For these analyses, the 1981 and 1985 NAMCS data sets were merged, generating a combined data set of 531 patients aged 25 years and older who presented to primary care offices with the complaint of dizziness. Valid national estimates could not be obtained from this data set for the following reasons: (1) the 1981 and 1985 sample weights were based on different populations and sampling schemes, and (2) the total number of observations in many of the analysis cells were so small that estimated standard errors would be extremely large.¹³ Therefore, sampling weights were not employed in these analyses.

TABLE 1. ESTIMATED PERCENTAGE OF AMBULATORY CARE PATIENT VISITS IN WHICH DIZZINESS WAS A PRESENTING COMPLAINT, UNITED STATES, 1985, BY AGE GROUP AND PRACTITIONER TYPE, NAMCS 1985, WEIGHTED DATA

Age (years)	Primary Care Practices*		Specialist Practices	
	As Chief Complaint	As 1 of up to 3 Presenting Complaints	As Chief Complaint	As 1 of up to 3 Presenting Complaints
0-14	.09	.24	.06	.09
15-24	.35	.72	.24	.46
25-34	.92	1.78	.42	.56
35-44	1.02	1.82	.36	.58
45-54	1.73	2.38	.55	1.14
55-64	1.54	2.04	1.00	1.50
65-74	2.19	3.39	1.04	1.77
75-84	2.42	4.01	.98	1.58
85 +	3.71	6.72	.90	1.59
Total	1.06	1.73	.58	.94

*Family physicians, general practitioners, general internists, and general pediatricians

RESULTS

Based on the experience of the 2879 responding physicians in the 1985 NAMCS, primary care physicians saw the majority of adult outpatients who identified dizziness as one of up to three presenting complaints (Figure 1). Of an estimated 7,879,936 patients aged 25 years and older seen by all physicians for dizziness in 1985, 44.5% visited general practitioners or family physicians and 22.6% visited general internists. Other physician specialty groups seeing the largest proportion of patients with dizziness include various internal medicine subspecialists, otolaryngologists, cardiologists, and surgical specialists.

In primary care, 1.06% of patients presented with dizziness as the primary reason for visiting, and 1.73% specified dizziness as one of up to three presenting complaints, with the proportion of patients complaining of dizziness increasing steadily with age (Table 1). At all ages dizziness is more common as a complaint in primary care than in specialist practices. Children aged 14 years and younger rarely complain of dizziness, whereas geriatric patients aged 75 years and older frequently present with the symptom.

The frequency of dizziness as a presenting complaint in primary care varies both by age and sex (Table 2). In all age categories, but most strikingly among the elderly, dizziness is more common as a presenting complaint of women than of men. The overall chi-square for this analysis, using weighted data, was statistically significant at the level $P < .0001$. The Breslow-Day test of the interaction between sex and the age categories of 25 to 74 years and 75

TABLE 2. PERCENTAGE OF PATIENTS WITH DIZZINESS AS A PRESENTING COMPLAINT, BY AGE AND SEX, PRIMARY CARE PRACTICES, NAMCS 1985, WEIGHTED DATA

Age (years)	Male (%)	Female (%)	Ratio	Sample Size (n)
25-34	1.39	2.00	1.44	3,398
35-44	1.35	2.09	1.55	2,909
45-54	2.12	2.54	1.20	2,611
55-64	1.40	2.47	1.76	3,259
65-74	2.91	3.69	1.27	3,329
75-84	2.00	5.17	2.58	1,992
85+	2.37	8.38	3.54	449
Total	1.87	3.03	1.62	17,498

NAMCS—National Ambulatory Medical Care Survey

years and older for primary care patients was statistically significant for weighted data ($P < .001$) but not for unweighted data ($P = .123$).

When the patients visiting for a chief complaint of dizziness ($n = 531$) were compared with the remainder of the primary care patients ($n = 30,650$), the following differences in demographic characteristics were noted: Patients with dizziness were slightly more often female (66.7%) than those without dizziness (60.8%) ($P < .01$). The proportion of patients complaining of dizziness who were white (88.9%) did not differ significantly from that of the nondizzy patients (89.8%). The mean age of patients with dizziness (61.3 years) was significantly higher than that of the patients without dizziness (54.3 years) ($P < .001$).

Among the 531 patients aged 25 years and older who presented with dizziness to primary care physicians during the 1981 and 1985 NAMCS data collection periods, physicians listed up to three primary diagnoses for each visit. The most common primary diagnoses among these 531 patients grouped by age are identified in Table 3. For all age categories hypertension was the most common diagnosis associated with dizziness.

Since the NAMCS data collection instrument did not explicitly link diagnoses with presenting complaints, the high prevalence of hypertension as a diagnosis among patients presenting with dizziness could be a confounding effect because of the high overall prevalence of this diagnosis. To test this hypothesis, national estimates were generated, using weighted data from the 1985 NAMCS, comparing the prevalence of hypertension as a diagnosis among patients presenting with dizziness and those presenting with other symptoms (Table 4). The results indicate that hypertension is strongly associated with dizziness among young adults, but that this relationship diminishes markedly with advancing age.

Table 5 represents the overall rates of various dispo-

TABLE 3. MOST COMMON PRIMARY DIAGNOSES ASSOCIATED WITH A CHIEF COMPLAINT OF DIZZINESS, ADULTS AGED 25+ YEARS, BY AGE CATEGORY, PRIMARY CARE PHYSICIANS, AND SPECIALISTS, NAMCS COMBINED DATA, 1981 AND 1985, UNWEIGHTED

Physician Category	Chief Complaint	Percent
Primary Care		
25-54 years (n=171)	Hypertension	17.0
	Labyrinthitis	17.0
	Dizziness, unspecified	13.4
	Hypoglycemia	3.5
55-74 years (n=232)	Hypertension	27.1
	Dizziness, unspecified	14.2
	Labyrinthitis	11.2
	Diabetes mellitus	3.9
75+ years (n=128)	Hypertension	13.3
	Coronary atherosclerosis	6.4
	Dizziness, unspecified	7.8
	Labyrinthitis	7.0
Specialist practices		
25-54 years (n=124)	Dizziness, unspecified	11.3
	Meniere's disease	6.5
	Benign positional vertigo	6.5
	Hypertension	6.5
55-74 years (n=136)	Dizziness, unspecified	11.0
	Hypertension	10.3
	Labyrinthitis	8.1
	Meniere's disease	5.1
75+ years (n=59)	Dizziness, unspecified	25.4
	Labyrinthitis	6.8
	Hypertension	6.8
	Unspecified cerebrovascular disease	6.8

NAMCS—National Ambulatory Medical Care Survey

sitions among the 531 patient visits recorded by primary care physicians for dizziness. Of these visits, eight (1.5%) resulted in hospitalization. Those eight patients had the following primary diagnoses for the office visit (one patient each): influenza, acute gastritis, drug adverse effect, syncope, coronary insufficiency, cardiac dysrhythmia of unspecified type, acute but ill-defined cerebrovascular disease, and diabetes mellitus with ketoacidosis. An additional 4.4% of patients were referred to specialists. Approximately two thirds were given a return appointment.

Most patients (89.3%) left the office with a drug prescription. The drugs most commonly prescribed, in order of frequency, were (percentage of patients noted in parentheses): meclizine (27.4%), hydrochlorothiazide-triamterene (5.6%), dipyrindamole (4.5%), α -methyl dopa (3.9%), and furosemide (3.9%).

TABLE 4. PROPORTION OF PATIENTS DIAGNOSED AS HYPERTENSIVE: A COMPARISON OF THOSE PRESENTING WITH DIZZINESS WITH THOSE NOT PRESENTING WITH DIZZINESS, NAMCS 1985

	Percent with Hypertension as a Primary or Secondary Diagnosis		
	25-54 years	55-74 years	75+ years
Chief complaint of dizziness	26.6	30.8	25.1
Some other chief complaint	9.8	24.3	23.2
Dizziness a presenting symptom	30.1	33.6	30.9
Dizziness not a presenting symptom	9.6	24.2	22.9

P < .001
NAMCS—National Ambulatory Medical Care Survey

DISCUSSION

Dizziness is a problem that is managed largely by primary care physicians. These data from the National Ambulatory Medical Care Survey show that approximately two thirds of adult patients who have dizziness as one of up to three presenting complaints are seen by general practitioners-family physicians or general internists. Since only 42.1% of all ambulatory patient visits were to these physician groups,¹⁵ dizziness is disproportionately managed at the primary care level. Dizziness is most common among female and elderly patients. It rarely results in hospitalization or referral. The majority of patients presenting with dizziness leave the physician's office with a prescription, with slightly over one quarter of patients receiving a prescription for meclizine. The primary diagnoses associated with dizziness vary with patient age, but hypertension, labyrinthitis, and lack of a specific diagnosis are common in all age categories.

Before further discussing these results, the limitations of these data should be noted. Being a survey designed for purposes other than the study of dizziness, the NAMCS did not describe or categorize patient dizziness as vertigo, dysequilibrium, and other subtypes of the symptom, or identify the duration and episodic or continuous nature of the complaint, all of which would have been useful in interpreting these data.^{2,19} In addition, the NAMCS did not provide diagnostic criteria for physician participants, which limits the validity of diagnostic data. Finally, no attempt was made to ensure that participating physicians record diagnoses that addressed the patients' presenting complaints. While such a linkage between chief complaint

and diagnosis is implicit in most primary care encounters, dizziness may represent a symptom for which a specific diagnosis is often not available and is therefore not recorded. Data about drug prescribing is similarly affected by a lack of linkage with either symptoms or diagnoses.

Nevertheless, these data do provide new insights into the epidemiology of this important symptom in primary care. The estimated number of annual visits nationally from patients aged 25 years and older with dizziness as a presenting complaint—7,879,936—is impressive. Also noteworthy is the steady increase in symptom prevalence with age in primary care office practice. These findings complement an earlier report identifying dizziness as the most common presenting complaint of ambulatory care patients aged 75 years and older.²⁰ The increased prevalence of dizziness among women aged 75 years and older (Table 2) has not been previously reported.

While the lack of an explicit link between presenting complaints and physician diagnoses limits the value of Table 3, a disparity between the common associated diagnoses in this study and those reported from referral dizziness units is striking. Several diagnoses identified as extremely common in specialty reports are absent. Many of these diagnoses, such as anxiety, multiple sensory deficits, benign positional vertigo, acute and recurrent labyrinthitis, transient cerebral ischemia, and cervical vertigo, depend almost entirely on historical data.^{2,9,10,21} While it is possible that the absence of such diagnoses represents lack of dissemination of diagnostic criteria to primary care physicians, the relative prevalence of various common diagnoses differs widely even among specialists.²²

Finally, the identification of hypertension as the most common diagnosis among the 531 patients who presented with a chief complaint of dizziness merits comment. The observed relationship between hypertension and dizziness could represent a true association, but a number of other explanations exist. As is evident from Table 4, the prevalence of hypertension in the general population approaches that among patients with dizziness, particularly in the older age categories, suggesting that a high population prevalence of hypertension is a major factor in the observed relationship between hypertension and dizziness. In addition, several other factors could contribute to this observed relationship: physician diagnostic behavior, which may be biased toward so-called hard diagnoses such as hypertension; drug effects, such as postural hypotension; or a relationship between anxiety (a well-accepted cause of dizziness) and elevated blood pressure.

The validity of observed relationships between dizziness and hypertension has been debated for decades. Prior to 1969, most authors argued that dizziness was a common presenting symptom of hypertension. In a classic paper, Ayman and Pratt observed high prevalences of somatic symptoms, including dizziness, among both psychoneu-

TABLE 5. DISPOSITION (PERCENTAGE) OF PATIENTS AGED 25 YEARS AND OLDER WHO PRESENTED TO PRIMARY CARE PHYSICIANS WITH A CHIEF COMPLAINT OF DIZZINESS, NAMCS COMBINED DATA, 1981 AND 1985, UNWEIGHTED

	All Patients (N=531)	25-54 (n=171)	55-74 (n=232)	75+ (n=128)
Admitted to hospital	1.5	0	1.7	3.1
Referred to specialist	4.4	4.1	4.3	4.7
Given a prescription	89.3	84.9	90.1	93.8
Given return appointment	63.2	53.5	70.7	62.5

rotic and hypertensive patients, postulating a causal link between anxiety and hypertension.²³ In recent decades, however, several studies have found weak or absent associations between dizziness and hypertension when potentially confounding variables are accounted for.²⁴⁻²⁶ Reported factors that may confound the data reported in this paper include a higher proportion of somatic complaints among hypertensive patients whose physician visit is for hypertension,²⁵ variations among physicians in the rate at which such complaints as dizziness are elicited,²⁷ and use of blood pressure medication.²⁸

CONCLUSIONS

Dizziness is a common presenting complaint of patients in primary care office practice. Its prevalence in the ambulatory setting is more common among women than men, rising with age in both sexes. Patients with dizziness are largely managed at the primary care level, with few requiring referral or hospitalization, and with the complaint presenting less frequently to specialists than to primary care physicians. The common diagnoses identified among these patients differ considerably from those reported from dizziness clinics, suggesting that the types of patients with dizziness seen in primary care differ from those reported in specialty settings.

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