

Prevalence and presentation of dizziness in a general practice community sample of working age people

LUCY YARDLEY

NATALIE OWEN

IRWIN NAZARETH

LINDA LUXON

SUMMARY

Background. Dizziness is known to be a common, handicapping condition in the elderly, and a strong association between dizziness and anxiety disorders has been observed in hospital samples. However, little is known about the prevalence of dizziness among people of working age in the community and its implications for psychosocial functioning and general practice consultation and treatment.

Aim. To determine the prevalence of dizziness, giddiness, vertigo, and unsteadiness, and associations with disability and handicap, symptoms of panic and agoraphobia, and general practice consultation and treatment.

Method. Postal questionnaires were completed by 2064 people aged 18–64 years randomly sampled from the patient lists of four London practices. Validated survey items were used to assess symptoms, panic and agoraphobia, levels of occupational disability and handicap, and general practice consultation and treatment.

Results. More than one in five responders ($n = 480$) had experienced dizziness during the past month; nearly half of these ($n = 225$) reported some degree of handicap and 30% had been dizzy for more than five years. Almost half ($n = 221$) of those with dizziness also reported anxiety and/or avoidance behaviour. Multiple physical and psychological symptoms were associated with higher levels of handicap. Only one in four of the 225 dizzy responders reporting some degree of handicap had received any form of treatment.

Conclusion. Dizziness is a common, chronic, and often untreated symptom in people aged 18–65 years, associated with extensive handicap and psychological morbidity.

Keywords: dizziness; questionnaire survey; anxiety.

Introduction

Little is known about the prevalence and psychosocial consequences of dizziness in the working age population. The Fourth National Morbidity Survey indicates a prevalence rate of 93 per 10 000 person-years at risk.¹ In the United States (US), the annual recorded incidence in primary care is 1.7%,² but self-

reports in outpatient departments indicate an annual prevalence of 17%³ and a lifetime prevalence of nearly 25%. United Kingdom (UK) estimates (derived from responses to single questions) include a lifetime prevalence of 'giddiness, dizziness, unsteadiness or lightheadedness' of about 40%⁴ and a current prevalence of one in four among a rural Welsh population aged 50–65 years,⁵ while 20% of a London sample aged 25–64 years reported 'giddiness' or 'difficulty keeping balance'.⁶

Dizziness is a non-specific symptom and, in a substantial proportion of cases, diagnosis must be based on clinical judgement supported by a basic clinical examination, as a definitive cause may not be confirmed by means of investigations.^{2,3,7-9} In the elderly, dizziness is linked to cardiovascular or neurological diseases, medication, or multisensory dysfunction,⁹ but in younger people it is often associated with vestibular disorder (such as labyrinthitis and benign paroxysmal positional vertigo), psychiatric disorder (especially anxiety and panic), and the use of sedatives, antidepressants, or tranquillizers.^{2,6,10-12} However, dizziness can be either a cause or a symptom of anxiety and can result from the use of psychoactive medication or may be the reason why it is prescribed. The prevalence of anxiety, panic disorder, and agoraphobia among hospital outpatients with balance disorders is much higher than in the general population,¹³⁻¹⁷ whereas the prevalence of balance system dysfunction among patients with panic disorder and agoraphobia is also high.^{18,19} Hospital-based research suggests that differential diagnosis of 'organic' versus 'psychogenic' dizziness may therefore be difficult and unhelpful in a substantial number of cases, as both physical and psychological factors contribute to a syndrome of chronic dysfunction.²⁰⁻²² The prevalence of this syndrome in primary care and the community remains unknown.

The chief aims of this study were to determine in the community the prevalence of dizziness in a population aged 18–65 years, the level of occupational disability and handicap associated with dizziness, the co-morbidity of symptoms of dizziness, panic and agoraphobia, and the relationship of these variables to general practice consultation and treatment.

Method

Sampling

On the basis of single-item data from a similar population,⁶ we calculated that a minimum of 1537 completed questionnaires were needed to detect, with a 95% probability, a miss rate of two patients per 1000 for an estimated prevalence of dizziness of 200 per 1000. Four North London practices with between one and five doctors were recruited to the study and, using random numbers, a one in three sample of patients in the participating practices between the ages of 18 and 64 years were sent a brief questionnaire with a prepaid envelope for reply (with a follow-up mailing for non-responders and telephone call if the number was available).

Survey questionnaire content and scoring

The survey questionnaire (developed by LY) was composed of three main questions exploring the presence of symptoms in the

L Yardley, MSc, PhD, senior lecturer; N Owen, BSc, research associate, Department of Psychology, University College London. I Nazareth, MBBS, DRCOG, MRCP, PhD, senior lecturer, Department of Primary Care and Population Sciences, Royal Free Hospital School of Medicine and University College London Medical School. L Luxon, BSc, FRCP, professor, Institute of Laryngology and Otolaryngology, University College London. Submitted: 17 January 1997; accepted: 12 September 1997.

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previous month relating to:

1. Dizziness, giddiness, unsteadiness, or an illusory sensation that the responder or things around the responder were moving. Information was then sought on the presence and duration of symptoms corresponding to four conventional categories:²² true vertigo; giddiness, light-headedness, or wooziness; feeling about to faint or lose consciousness; feeling unsteady, off balance, or about to fall or veer to one side.
2. Anxiety or tension such that the responder panicked and felt that he or she might collapse, lose control, or go crazy. Further questions determined whether the anxiety occurred unexpectedly and was accompanied by breathing difficulties, chest pain, or dizziness (indices of panic attacks, defined by ICD-10²³ and DSM-IV²⁴ criteria), and whether the responder experienced dizziness when not anxious. The stem question was used to categorize responders as reporting anxiety, whereas those reporting acute anxiety accompanied by at least one somatic symptom were classified as having symptoms of panic.
3. Avoidance of a situation or thing because it would have made the responder feel nervous or anxious even though there was no real danger. Subsidiary questions assessed avoidance of the following situations: being far from home; crowds; open spaces; travelling alone. Responders were classified as exhibiting avoidance behaviour if they replied 'yes' to the first item and as showing signs of agoraphobic behaviour if they reported avoidance of at least two of the provocative situations assessed (criteria for agoraphobia consistent with ICD-10 and DSM-IV).

Additional questions assessed interference with capacity to work, daily activities, social activities, and leisure activities. Scores on the last three items (ranging from 0 to 2) were summed to yield an internally consistent handicap scale (Cronbach's alpha coefficient = 0.83). The questions on dizziness were derived from the Vertigo Symptom Scale,²⁵ those on anxiety and panic attacks were taken from the CIS-R,²⁶ and the handicap dimensions were derived from the *Maudsley Pocket Book of Clinical Management*.²⁷

Information was also collected on age, occupational status, reported consultations with the general practitioner (GP), and treatments received for dizziness (medication and/or counselling).

Statistical analysis

Associations between categorical variables were examined by odds ratios and the chi-squared test, and between-group comparisons by the *t*-test or one-way ANOVA for two or more groups respectively. Test-retest reliability of handicap scores (which were not normally distributed) was assessed using Pearson's rank correlation, and correspondence between survey and validation classifications was calculated using the kappa statistic.

Significant predictors of anxiety, avoidance behaviour, consultation, and treatment were identified using independent chi-squared tests (which provided the unadjusted odds ratios) and then entered into a backward stepwise logistic regression model to determine the relative influence of each variable (indicated by the adjusted odds ratio).

Validation of questionnaire survey items

Each question was validated by comparison with responses to an established validated scale: the Vertigo Symptom Scale (VSS)²⁵ was used to validate the dizziness survey items; the Panic Attack Questionnaire (PAQ)²⁸ to validate the anxiety/panic items; and the Fear Questionnaire (FQ)²⁹ to validate the agoraphobic behaviour items. All responders who indicated willingness to participate in further research and who reported dizziness and a handicap score greater than one were sent a booklet of these validated scales, which was also administered to a random selection of responders with anxiety, non-handicapping dizziness, or no symptoms. The resulting subsample ($n = 170$) did not differ from the total sample in terms of age, sex, or occupation; 105 were dizzy, 45 had no symptoms, and half (85) reported anxiety and avoidance behaviour.

During the month that elapsed between replying to the survey and to the questionnaire booklet, 19 (11.2%) responders ceased to be dizzy, seven (4.1%) became dizzy, and the status of 144 remained unchanged. Test-retest reliability of the handicap scale among the 86 responders who were dizzy at both times was 0.74 ($P < 0.001$).

Responders reporting dizziness had elevated scores on the vertigo scale of the VSS [dizzy responders' mean = 13.9 (95% CI = 12.3–15.5); non-dizzy mean = 3.4 (95% CI = 2.6–4.2)]. Similarly, responders reporting agoraphobic behaviour had significantly higher scores on the agoraphobia scale of the FQ: those reporting no phobia had a mean score of 3.0 (95% CI = 2.1–3.9) and those reporting some avoidance behaviour scored 5.4 (95% CI = 2.9–8.0), whereas those classified as showing signs of agoraphobic behaviour scored 15.8 (95% CI = 11.7–19.9). The PAQ was used to categorize responders as having no panic symptoms ($n = 86$), limited symptoms of panic ($n = 47$), or multiple symptoms of panic disorder ($n = 37$), defined by the following criteria: more than two unexpected attacks in the past year of intense anxiety, peaking within 10 minutes, accompanied by at least four typical panic symptoms and with fear of panic between attacks. Agreement was demonstrated between the PAQ and survey identification of responders with symptoms of panic ($\kappa = 0.74$, $P < 0.001$).

Results

Of the 5326 questionnaires posted, 1522 (28.6%) were returned marked that the addressee had moved and 2064 (54.3%) were returned completed; 138 (3.6%) people refused to participate and 1602 (42.1%) did not reply. Telephone calls to the 615 non-responders with recorded telephone numbers revealed that 364 (59.2%) had moved. An estimate of the number of non-responders without recorded telephone numbers who had changed address was obtained by sending registered letters to a subsample of 200, of whom 115 (57.5%) were found to have moved. Extrapolating from these figures, our effective response rate was at least 69%.

Women (odds ratio = 1.70, 95% CI = 1.52–1.90) and older people (mean age of responders = 38.7 years, 95% CI = 38.3–39.1, mean age of non-responders = 36.5 years, 95% CI = 36.0–37.0) were more likely to respond to the questionnaire. The social class distribution of the responders was 60.7% (1136) social classes I to IIIN, 21.6% (405) classes IIIM to V, 5% (93) students, and 12.8% (239) not in paid employment; 9.3% (191) could not be classified.

Dizziness

A total of 480 responders (23.3%) reported symptoms of dizziness in the past month (see Table 1), and nearly half experienced

Table 1. One-month prevalence of dizziness (percentages, with numbers in brackets).

	None	Non-handicapping	Handicapping
Men			
age 18–35	82.9 (300)	11.0 (40)	6.1 (22)
age 36–64	81.5 (387)	8.4 (40)	10.1 (48)
Women			
age 18–35	71.3 (418)	16.6 (97)	12.0 (71)
age 36–64	75.2 (477)	11.5 (73)	13.2 (84)
Total men	82.1 (687)	9.6 (80)	8.4 (70)
Total women	73.4 (895)	13.9 (170)	12.7 (155)
Total age 18–35	75.7 (718)	14.5 (137)	9.8 (93)
Total age 36–64	77.9 (864)	10.2 (113)	11.9 (132)
Grand total	76.9 (1582)	12.1 (250)	10.9 (225)

Responders were classified as reporting 'handicapping' dizziness if they indicated that dizziness interfered with any of the three dimensions of activity included in our handicap scale. Seven responders could not be classified owing to missing data on some items.

some handicap. Women were more likely to report dizziness than men (odds ratio = 1.66, 95% CI = 1.32–2.07). Mild, non-handicapping dizziness was reported more often by those under 36 years of age, but handicapping dizziness was significantly more common in the older age group ($\chi^2 = 10.0$, $df = 2$, $P < 0.01$). Those in social classes I to IIIN were more likely to experience symptoms of mild dizziness and less likely to have handicapping dizziness than those in classes IIIM to V ($\chi^2 = 9.3$, $df = 2$, $P < 0.01$).

Only 26% (110) of those replying to the item assessing the duration of the dizziness stated that it had lasted for less than six months, whereas 44% (185) had been dizzy for between six months and five years and 30% (127) for more than five years. More than half (244) of the responders with dizziness reported postural unsteadiness, 64% (310) reported giddiness or lightheadedness, 30% (147) complained of feeling faint, and 29% (139) reported true vertigo. Nearly half (235) of the responders who reported dizziness had a mixture of symptoms. Mean handicap levels rose steadily with the number of symptoms reported ($F_{3,463} = 10.52$, $P < 0.0001$). Giddiness was more common in the younger age group (odds ratio = 1.42, 95% CI = 1.12–1.81).

Among responders with dizziness who were working or wished to work, 41.3% (126) reported that dizziness caused occupational difficulties. Of those not working (194), 20.6% (40) said this was because of dizziness (sometimes in combination with anxiety), whereas, of those working (278), 12.3% (35) had days off work or changed their occupation and 25% (72) had difficulty carrying out their job satisfactorily.

Co-morbidity with anxiety

The presence of anxiety during the past month was reported by 15.3% of the sample (315) and avoidance behaviour by 13.7% (282; see Table 2). There was no relationship with age, but a higher proportion of women than men reported anxiety (odds ratio = 1.79, 95% CI = 1.38–2.32) and avoidance (odds ratio 1.44, 95% CI = 1.11–1.88).

Co-morbidity between dizziness, anxiety, and avoidance behaviour is described in Table 3, which shows that handicap levels increase significantly with co-morbidity ($F_{6,657} = 34.46$, $P < 0.001$). Some degree of anxiety, avoidance, or both was reported by 46% (221) of those with dizziness compared with 13.3% (210) of those without dizziness, whereas the more severe

Table 2. One-month prevalence of anxiety/panic and phobic avoidance behaviour (percentages, with numbers in brackets).

	None	Mild	Severe
Anxiety			
Men	89.0 (749)	4.4 (37)	6.7 (56)
Women	81.8 (1000)	7.5 (92)	10.6 (130)
Total	84.7 (1749)	6.3 (129)	9.0 (186)
Avoidance			
Men	88.8 (743)	6.9 (58)	4.3 (36)
Women	84.6 (1031)	9.6 (117)	5.8 (71)
Total	86.0 (1775)	8.5 (175)	5.2 (107)

Responders were classified as suffering from 'mild' anxiety or avoidance behaviour if they replied positively to the relevant stem questions, and as suffering from 'severe' anxiety or avoidance behaviour if they also met our criteria for signs of panic or agoraphobia. In the 'avoidance' section, eight responders could not be classified owing to missing data on some items.

Table 3. Co-morbidity of dizziness, anxiety and avoidance behaviour, and relationship to mean levels of handicap (with standard deviations in brackets).

Symptom combination	Mean handicap level
Dizziness only ($n = 259$)	0.60 (1.3)
Anxiety only ($n = 81$)	0.76 (1.3)
Avoidance only ($n = 66$)	1.26 (1.7)
Dizziness and anxiety ($n = 64$)	1.15 (1.6)
Dizziness and avoidance ($n = 47$)	1.68 (1.6)
Anxiety and avoidance ($n = 63$)	2.50 (2.0)
Dizziness, anxiety and avoidance ($n = 110$)	3.24 (2.0)

clusters of symptoms typical of panic or agoraphobia were reported by 27.7% (133) of those with dizziness compared with 6.1% (96) of those without dizziness. Of those reporting anxiety, slightly more than half (186) also reported dizziness, and 85 reported dizziness when they were not anxious. Such individuals were more likely to complain of true vertigo than those who experienced dizziness only when anxious (odds ratio = 1.16, 95% CI = 1.16–4.36). Among the responders with dizziness, anxiety was more common in occupational classes IIIM–V and was associated with fainting and a duration of dizziness of less than two years (see Table 4). Avoidance behaviour was common in the older age group and was associated with fainting, postural unsteadiness, and vertigo.

Consultation and treatment

Of all symptomatic responders, 40% (264) had consulted their GP, and one third of these (91) had received some form of treatment. Factors predicting consultation and treatment are shown in Table 5. Despite an association between handicap, consultation, and treatment, 40.6% (91) of the responders who reported handicapping dizziness failed to consult their doctor, and only a quarter of (55) responders handicapped by dizziness received treatment.

Discussion

Dizziness is a common, chronic condition associated with a significant degree of handicap and occupational disability. One in

Table 4. Odds ratios of variables predicting psychological morbidity in people with dizziness.

Dependent variable	Covariate	Unadjusted odds ratio	Adjusted odds ratio
Anxiety	Feeling faint	2.09 (1.4–3.1) ^c	2.04 (1.2–3.6) ^c
	Dizziness duration (< 2 years)	1.73 (1.2–2.6) ^b	2.48 (1.5–4.2) ^c
	Occupation (classes IV–VI)	1.74 (1.05–2.88) ^a	1.79 (1.00–3.19) ^a
Avoidance	Age (> 35 years)	1.99 (1.34–2.95) ^c	2.10 (1.40–3.13) ^c
	Feeling faint	1.75 (1.2–2.6) ^b	1.83 (1.2–2.8) ^b
	Imbalance	1.66 (1.3–2.4) ^b	1.64 (1.11–2.46) ^b
	Vertigo	1.53 (1.0–2.3) ^a	Excluded ^d

^a $P < 0.05$; ^b $P < 0.01$; ^c $P < 0.001$. ^dVariable excluded from backwards conditional entry logistic regression equation because it does not improve the fit of the model.

Table 5. Odds ratios of variables predicting consultation and treatment in people with dizziness.

Dependent variable	Covariate	Unadjusted odds ratio	Adjusted odds ratio
Consultation	Age (> 35 years)	2.28 (1.57–3.32) ^c	2.56 (1.82–4.66) ^b
	Feeling faint	2.29 (1.5–3.4) ^c	2.92 (1.5–5.6) ^b
	Handicap score (>2)	5.01 (3.17–7.93) ^c	3.22 (1.44–7.17) ^b
	Occupational disability	5.61 (3.29–9.55) ^c	2.70 (1.36–5.31) ^b
	Vertigo	2.14 (1.4–3.2) ^c	2.57 (1.3–5.0) ^b
	Avoidance (severe)	5.07 (2.77–9.28) ^c	3.12 (1.00–9.78) ^a
	Occupation (classes IV–VI)	1.65 (1.00–2.73) ^a	2.06 (1.00–4.22) ^a
	Anxiety/panic (severe)	3.65 (2.35–5.69) ^c	Excluded ^d
Treatment	Handicap score (> 2)	3.15 (1.71–5.80) ^c	2.91 (1.28–6.62) ^b
	Occupational disability	18.78 (2.45–144.08) ^c	10.13 (1.22–84.77) ^a
	Avoidance (severe)	1.99 (1.01–3.91) ^a	Excluded ^d

^a $P < 0.05$; ^b $P < 0.01$; ^c $P < 0.001$. ^dVariable excluded from backwards conditional entry logistic regression equation because does it not improve the fit of the model.

five people of working age had symptoms of dizziness in the previous month; half of these were handicapped to some degree and 40% of those who were working reported occupational difficulties. These results are consistent with previous prevalence estimates in community samples.^{3,5,6}

More than half of those reporting anxiety also complained of dizziness, and the prevalence of reported anxiety or panic-related symptoms was three times greater among people with dizziness than among those without. Similarly, a third of responders with symptoms of dizziness reported avoidance behaviour compared with just 13.7% of those without, whereas 54.9% of those reporting avoidance behaviour also complained of dizziness. It is likely that both psychosomatic and somatopsychic mechanisms contribute to this co-morbidity. Anxious people are more likely to report physical symptoms, and dizziness is one of the most prominent symptoms of both panic attacks and hyperventilation. Conversely, physical illness tends to cause anxiety and stress; in particular, vestibular dysfunction is a risk factor for the development of panic disorder and agoraphobia. However, the combination of dizziness and anxiety and avoidance behaviour is more handicapping than any of these complaints in isolation. This may be because avoidance of activity tends to retard compensation following vestibular dysfunction and can lead to a vicious cycle of escalating anxiety, dizziness, and handicap.^{14,21} Although the highest levels of anxiety in this study were associated with a history of dizziness of less than two years, no relationship between avoidance behaviour and the duration of dizziness was observed.

This suggests that, whereas the subjective distress associated with dizziness may decline over time, the self-handicapping behaviour that accompanies dizziness may become habitual and be prolonged indefinitely.

The highest levels of avoidance behaviour and handicap in our sample were associated with multiple physical and psychological symptoms, including anxiety, panic, feeling faint, unsteadiness, and vertigo. This cluster of symptoms is characteristic of patients with both serious physical disorders and serious psychiatric disorders. Hence, these symptoms cannot be used as differential diagnostic indicators (i.e. to exclude either physical or psychiatric dysfunction) but may, nonetheless, provide a useful clue to the presence of physical or psychiatric dysfunction. For example, feeling faint was a marker for psychological distress, whereas the presence of true vertigo seemed to suggest some degree of organic dysfunction, as those responders who reported anxiety and vertigo were more likely also to experience dizziness when they were not anxious.

The combination of a symptomatic prevalence in the community of more than 20% and recorded annual consultation rates of less than 2% indicates that, in many cases, dizziness becomes an enduring, untreated complaint; indeed, less than a quarter of those reporting handicapping dizziness in this survey had received treatment. Similarly, a study of 100 consecutive out-patients in the US with dizziness found that less than one-third received diagnoses of disorders for which a treatment plan exists,¹⁰ while follow-up of a small sample revealed that less

than half felt they had received helpful therapy.³ Although medication has a role in the treatment of some types of dizziness and a more limited role in the short-term symptomatic relief of vertigo, a recent review of pharmacological treatment for vertigo³⁰ recommended, as the therapy of choice, a package of measures known as 'vestibular rehabilitation' — a combination of physiotherapy and cognitive behavioural therapy, which has both physical and psychological benefits.³¹ As dizziness is not only disabling and handicapping in people of working age, but is also a risk factor for falls and serious morbidity in old age,³² early and widespread use of a vestibular rehabilitation programme (see following article, this issue³³) might play an important preventative role in arresting the damaging cycle of chronic dizziness, anxiety, and inactivity.

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Address for correspondence

Dr L Yardley, Department of Psychology, University College London, Gower St, London WC1E 6BT. Email: l.yardley@ucl.ac.uk



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