Psychological Comorbidities and Their Relationship to Self-Reported Handicap in Samples of Dizzy Patients

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Abstract

Factors such as anxiety, depression, somatic awareness, autonomic symptoms, and differences in coping strategies are known to affect dizziness handicap. We studied these factors in 63 consecutive "dizzy" patients. This sample was subgrouped into normals and patients with benign paroxysmal positional vertigo, compensated and uncompensated unilateral peripheral vestibular system impairment, or abnormal vestibular evoked myogenic potential as a single significant diagnostic finding. Results showed that (1) anxiety and depression occur with greater frequency in dizzy patients than in the normal population; (2) the magnitude of anxiety, depression, somatization, and autonomic symptoms does not differ significantly in subgroups of patients; (3) women tended to report greater handicap and somatic/autonomic symptoms; and (4) Dizziness Handicap Inventory total scores were correlated with patients' complaints of somatic/autonomic symptoms, anxiety, depression, and coping strategies. These findings suggest that self-reported measures represent unique pieces of information important for the management of dizzy patients.

Key Words: Comorbidity, coping skills, dizziness, handicap

Abbreviations: BPPV = benign paroxysmal positional vertigo; DHI = Dizziness Handicap Inventory; HADS = Hospital Anxiety and Depression Scale; UW = unilateral weakness; VEMP = vestibular evoked myogenic potential; VRT = vestibular rehabilitation therapy; VSS = Vertigo Symptom Scale; WOCQ = Ways of Coping Questionnaire

Sumario

Factores tales como la ansiedad, la depresión, la conciencia somática, los síntomas autonómicos y las diferencias en las estrategias de afrontamiento, se sabe que afectan el impedimento por mareo. Estudiamos estos factores en 63 pacientes "mareados" consecutivos. Esta muestra

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fue sub-agrupada en pacientes normales, con vértigo posicional paroxístico benigno, con trastornos periféricos unilaterales, compensados y descompensados, del sistema vestibular, o con potenciales miogénicos vestibulares evocados anormales, como único hallazgo diagnóstico significativo. Los resultados mostraron que (1) la ansiedad y la depresión ocurrían con mayor frecuencia en pacientes mareados que en la población normal; (2) la magnitud de la ansiedad, la depresión, la somatización y los síntomas autonómicos no difería significativamente entre los sub-grupos de pacientes; (3) las mujeres tendieron a reportar un impedimento mayor y mayores síntomas somáticos/autonómicos; y (4) los puntajes totales del Inventario de Impedimento por Mareo correlacionaron con los quejas de los pacientes de síntomas somáticos/autonómicos, ansiedad, depresión, y estrategias de afrontamiento. Estos hallazgos sugieren que las mediciones auto-reportadas representan piezas singulares de información importante para el manejo de los pacientes mareados.

Palabras Clave: Co-morbilidad, habilidades para afrontamiento, mareo, impedimento

Abreviaturas: BPPV = vértigo posicional paroxístico benigno; DHI = Inventario de Impedimento por Mareo; HADS = Escala Hospitalaria de Ansiedad y Depresión; UW = debilidad unilateral; VEMP = potencial miogénico vestibular evocado; VRT = terapia de rehabilitación vestibular; VSS = Escala de Síntomas del Vértigo; WOCQ = Cuestionario de formas de afrontamiento

Conventional vestibular system tests measure the presence or absence of impairment. However, it is known that factors other than *impairment* affect both self-reported handicap and quality of life (Hallam and Stephens, 1985; Jacobson and Newman, 1990; Yardley et al, 1992b; Jacob et al, 1996a). These factors may include comorbidities such as anxiety, depression, and somatic awareness and autonomic symptoms. Often, it is difficult to sort out whether these comorbidities existed prior to or occurred as a result of the patient's dizziness complaints. However, these comorbid factors augment perceptions of dizziness and vertigo and may be the sole cause of complaints that cannot be explained by the results of quantitative measures of vestibular function. Recent studies have examined the relationships among anxiety, depression, somatic complaints, vestibular impairment, and dizziness handicap (Hallam and Stephens, 1985; Yardley et al, 1992b; Jacob et al, 2003; Jacob et al, 1996a; Jacob et al, 1996b; Furman et al, 1998; Yates, 1998; Yardley, 2000; Jacob and Furman, 2001; Jacob et al, 2003; Holmberg et al, 2005; Best et al, 2006; Staab and Ruckenstein, 2007).

Patients who demonstrate anxiety with dizziness have an increased handicap and poorer prognosis (Yardley, 2000; Jacob and Furman, 2001). According to Jacob and colleagues (2003), "Anxiety symptoms—both somatic and cognitive—are perhaps the most pervasive psychiatric complication of vestibular dysfunction" (p. 872). Depression is another psychological consequence that occurs following stressful or persistent symptoms such as dizziness (Jacob et al, 2003). Dizziness may result in activity restrictions in daily life and psychosocial consequences, due to the often persistent nature of some types of dizziness. In this regard, patients may feel helpless and become withdrawn because of their debilitating symptoms, even if the central vestibular system has compensated for the impairment. Thus, dizziness may result in both *disability* and *handicap*. Further, somatization (i.e., a patient's increased attention to physical symptoms) may also contribute to a patient's report of handicap (Best et al, 2006). Vestibular

impairments give rise to autonomic symptoms including nausea, vomiting, increased sweating, pallor, and hyperventilation (Furman et al, 1998). Therefore, somatization may make it difficult for the clinician to reliably discriminate the patient's subjective reports of symptoms of vestibular impairment from complaints (i.e., including autonomic symptoms) associated with somatic hypervigilance (Jacob et al, 2003).

Assessment of individual coping strategies also has been suggested as a mechanism to understand discrepancies between the results of conventional quantitative vestibular assessments and the complaints from patients (Hallam and Stephens, 1985). Specifically, Hallam and Stephens (1985) suggest that patients presenting with minor vestibular impairment but with large amounts of emotional distress, including anxiety and depression, may be using maladaptive strategies for coping. It is known that emotional distress resulting *from* dizziness, or coexisting *with* dizziness, may prolong recovery from a vestibular disorder (Jacob et al, 1996a; Jacob et al, 2003). Individual coping abilities may index the speed and quality of recovery from vestibular impairment.

Previous studies have demonstrated that vestibular impairment can result in vertigo, which may cause anxiety, depression, somatic complaints, and elevated indexes of dizziness handicap. Also, comorbid conditions can exacerbate vertiginous symptoms. Patients with anxiety, depression, and somatic complaints may complain of disequilibrium or disorientation (i.e., "dizziness" instead of true vertigo) and may have no quantitative evidence of vestibular impairment but demonstrate evidence of severe self-reported dizziness handicap. Finally, some patients with quantitative evidence of vestibular system impairment do not demonstrate anxiety, depression, somatic complaints, or dizziness handicap. Perhaps the explanation for these group differences may be found in the presence of comorbid conditions and the effectiveness of individual coping skills.

The purpose of this investigation was to assess anxiety, depression, somatization, autonomic symptoms, coping mechanisms, and dizziness handicap in an unselected group of patients seen in our Balance Disorders Clinic. Specifically, the purpose of the present study was to determine (1) how and to what extent comorbid conditions (e.g., depression, anxiety,

somatization, and autonomic symptoms) were observed in an unselected (sequential) group of dizzy patients; (2) to what extent measures of depression, anxiety, and somatization differ in the following broad clinical groups: (a) patients with normal results on quantitative testing, (b) patients with compensated unilateral vestibular system impairment, (c) patients with uncompensated unilateral vestibular system impairment, (d) patients with benign paroxysmal positional vertigo, and (e) patients with abnormal vestibular evoked myogenic potential as a sole clinical finding; (3) whether measures of anxiety, depression, somatization, and dizziness handicap are affected systematically by age or gender; and (4) to what extent measures of anxiety, depression, somatization, autonomic symptoms, and coping methods are predictive of self-reported dizziness handicap.

MATERIALS AND METHOD

Subjects and Procedures

The protocol was approved by the Institutional Review Board of Vanderbilt University, and informed consent was obtained from each patient. The study group was a sample of convenience. Subjects were 63 adults (45 female) seen consecutively for vestibular system assessments at Vanderbilt Balance Disorders Clinic. The mean age of the subject sample was 54 years (SD = 14, range 27–82 years). Each subject underwent electronystagmography or videonystagmography, sinusoidal harmonic acceleration, and vestibular evoked myogenic potentials (VEMPs). Subjects were classified into five groups based on the results of their balance function testing:

Group 1—Normal (n = 30; six males; mean age = 53.3 years ± 13.5): patients showing normal results on quantitative testing of balance function.

Group 2—Compensated Unilateral Weakness (n = 11; seven males; mean age = 50.2 years ± 15.3): patients demonstrating unilateral weakness (UW) on caloric testing and normal rotational testing with the singular exception of a phase abnormality at 0.01 Hz.

Group 3—Uncompensated Unilateral Weakness (n = 7; two males; mean age =

62.5 years ± 13.3): patients demonstrating UW on caloric testing and an abnormal rotational examination usually including multiple-frequency phase leads, VOR asymmetries, and abnormally low gain for low rotational frequencies. The VOR asymmetries often occurred in conjunction with spontaneous nystagmus.

Group 4—Abnormal Vestibular Evoked Myogenic Potential (n = 5; two males; mean age = 58.8 years ± 10.1): patients showing an abnormal VEMP either unilaterally or bilaterally with all other quantitative measures being normal.

Group 5—Benign Paroxysmal Positional Vertigo (n = 10; six males; mean age = 55.8 years ± 15.2): patients demonstrating a positive (i.e., abnormal) Dix-Hallpike maneuver in either the head-dependent right or left positions.

All patients were placed into one of these five groups. Patients with benign paroxysmal positional vertigo (BPPV) were classified as having BPPV if positional vertigo was the patient's primary complaint even if it was associated with a compensated or uncompensated unilateral impairment.

After the electroneurodiagnostic assessments were completed patients were asked if they would be willing to complete a series of standardized questionnaires designed to determine the magnitude of the patient's self-reported dizziness disability/handicap (i.e., Dizziness Handicap Inventory), the magnitude of somatic anxiety and autonomic arousal experienced by the patient (i.e., Vertigo Symptom Scale), the magnitude of anxiety and depression the patient was experiencing (i.e., Hospital Anxiety and Depression Scale), and the means by which the patient coped with adversity (i.e., Ways of Coping Questionnaire). Patients completed the questionnaires using a paper/pencil format.

Questionnaires

Dizziness Handicap Inventory

The Dizziness Handicap Inventory (DHI) is a 25-item self-report questionnaire designed to evaluate self-perceived handicap in dizzy patients (Jacobson and Newman, 1990). The questionnaire includes three subscales: functional, emotional, and physical. Statements are answered using a "yes" (four points),

"sometimes" (two points), and "no" (zero points) format. The sum of responses to all items represents the total self-perceived handicap score, with the minimum score being 0 (i.e., represents no self-perceived dizziness handicap) and a maximum score of 100 (i.e., represents severe self-perceived dizziness handicap). The psychometric adequacy of the DHI has been reported previously (Jacobson and Newman, 1990). The DHI demonstrates good validity and high test–retest reliability. Only the DHI total score was used in this study.

Vertigo Symptom Scale

The Vertigo Symptom Scale (VSS) is a 31-item questionnaire designed to quantify the frequency of vertigo and symptoms commonly seen in vertigo patients (Yardley et al, 1992a). The scale assesses sensations of dizziness and unsteadiness, common associated symptoms (e.g., nausea, sweating), and signs of anxiety arousal and somatization. The VSS includes two subscales: somatic/autonomic symptoms (SA) and vertigo severity (VS). The SA subscale includes items designed to quantify autonomic symptoms and signs of somatization. The VS subscale is used to quantify symptoms of acute vertigo and vertigo of short duration. Each item is rated using a Likert scale of "never" (zero points) to "very often" (four points). Only the VSS-SA subscale was used in this study. The values for the VSS presented in this study are the mean values for the SA subscale (i.e., range of 0–4).

Hospital Anxiety and Depression Scale

The Hospital Anxiety and Depression Scale (HADS) is a 14-item self-report scale developed to detect depression and anxiety in a hospital medical outpatient clinic (Zigmond and Snaith, 1983). The HADS has been shown to be a reliable instrument for screening current states of anxiety and depression. Each of the subscales consists of seven items, and each item is assigned a score from zero to three points. For each of the depression and anxiety subscales a score of 11 or greater is associated with clinically significant anxiety or depression (Zigmond and Snaith, 1983).

Ways of Coping Questionnaire

The Ways of Coping Questionnaire (WOCQ) is a 66-item device designed to assess coping processes that may occur

during a particular stressful encounter (Folkman et al, 1986). Items consist of various thoughts or acts one may use in dealing with a stressful situation and are rated from "not used" (zero points) to "used a great deal" (three points). The following eight subscales were administered: Confrontive Coping, Distancing, Self-Controlling, Seeking Social Support, Accepting Responsibility, Escape/ Avoidance, Planful Problem Solving, and Positive Reappraisal. A description of each subscale is shown in Table 1. The values for the WOCQ presented in this study are the mean values for each subscale (i.e., 0–3).

RESULTS

All 63 patients in the present study were referred for balance function testing due to complaints of vertigo, dizziness, light-headedness, or static or dynamic postural instability. Following quantitative testing, 33 (52.3%) of the sample could be classified as having abnormal test results on balance function testing. This proportion is consistent with that reported by other investigators (e.g., 56% of the sample reported by Yardley et al, 1992a, had abnormal results on vestibulometric testing). Table 2 shows mean data for all subjects for the DHI total score, VSS-SA subscale score, both HADS subscale scores, and the eight subscales of the WOCQ.

General Findings

Dizziness Handicap Inventory

The DHI total score was 39.7 points on average (see Table 2), representing a moderate self-perceived dizziness handicap. The range of scores on the DHI varied from 2 (no self-perceived handicap) to 96 (severe self-perceived handicap).

Hospital Anxiety and Depression Scale

Using normative comparative data for the HADS (Zigmond and Snaith, 1983), the mean scores of the cohort indicated that, on average, this sample showed no evidence of anxiety or depression (see Table 2). Individual scores, however, suggested that 14 (22.2%) of the total sample showed evidence of anxiety and seven (11.1%) showed evidence of depression (i.e., HADS subscale scores of 11 or greater).

Ways of Coping Questionnaire

As shown in Table 2, Seeking Social Support (e.g., "Accepted sympathy and understanding from someone") and Self-Controlling (e.g., "I tried to keep my feelings to myself") were the most frequently endorsed coping responses. Confrontive Coping responses (e.g., "I let my feelings out somehow") were relatively less frequently endorsed.

Effect of Patient Diagnostic Group on Scale Scores

A two-sample t-test was used to evaluate differences in questionnaire scores between subjects with normal vestibular function (n = 30; six males; mean age = 53.3 ± 13.5 years) and those with abnormal results (n = 33; 12 males; mean age = 55.8 ± 14.3 years). For this analysis the scale scores (e.g., DHI total score) represented the dependent variable, and the patient group (i.e., normal/ abnormal) served as the grouping variable. None of the group comparisons reached statistical significance (i.e., p > .05).

A one-way analysis of variance was conducted separately for each scale and subscale score. For each of these analyses the dependent variable was the scale score (e.g., DHI total score), and the grouping variable was the patient classification (i.e., normal, compensated UW, uncompensated UW, abnormal VEMP, BPPV). The results of these analyses also showed no significant group differences.

Effects of Age and Gender on Scale Scores

The mean age of the cohort was 55 years (SD = 14), with a range of 27–82 years. A two-sample t-test was used to investigate whether subject age (i.e., young = <65 years of age; old = ≥65 years of age) had an impact on each of the subscales and the DHI total score. The only group comparison to reach statistical significance was the Confrontive Coping subscale of the WOCQ (t = –2.3, df = 61, p = .02). None of the other group comparisons reached statistical significance (i.e., p > .05). That is, older patients reported using Confrontive Coping strategies more frequently than younger patients.

The mean ages of women and men in this sample were 47 years (SD = 9, range 27–73 years) and 73 years (SD = 5, range 66–82 years), respectively. The subscale scores

Table 1. Descriptions of the Ways of Coping Questionnaire Subscales

Subscale	Description
Confrontive Coping	Describes aggressive efforts to alter the situation and suggests some degree of hostility and risk taking.
Distancing	Describes cognitive efforts to detach oneself and to minimize the significance of the situation.
Self-Controlling	Describes efforts to regulate one's feelings and actions.
Seeking Social Support	Describes efforts to seek informational support, tangible support, and emotional support.
Accepting Responsibility	Describes acknowledgment of one's own role in the problem with a concomitant theme of trying to put things right.
Escape/Avoidance	Describes wishful thinking and behavioral efforts to escape or avoid the problem. Items on this scale contrast with those on the Distancing scale, which suggest detachment.
Planful Problem Solving	Describes deliberate problem-focused efforts to alter the situation, coupled with an analytic approach to solving the problem.
Positive Reappraisal	Describes efforts to create positive meaning by focusing on personal growth. It also has a religious dimension.

Source: Adapted from Folkman and Lazarus, 1988, p. 8.

Table 2. Mean (SD) Scores for the Dizziness Handicap Inventory (DHI) Total and the Vertigo Symptom Scale (VSS), Hospital Anxiety and Depression Scale (HADS), and Ways of Coping Questionnaire (WOCQ) Subscales

Scale	Mean	Standard Deviation
DHI total[a]	39.7	22
VSS subscale[b]		
Somatic/Autonomic Symptoms	1.13	0.67
HADS subscales[c]		
Anxiety	7.06	4.23
Depression	4.88	4.26
WOCQ subscales[d]		
Confrontive Coping	0.88	0.62
Distancing	1.17	0.59
Self-Controlling	1.30	0.69
Seeking Social Support	1.77	0.61
Accepting Responsibility	0.95	0.75
Escape/Avoidance	0.97	0.63
Planful Problem Solving	1.13	0.68
Positive Reappraisal	1.28	0.67

[a]Maximum 100 points, minimum 0 points.

[b]Maximum 4 points, minimum 0 points.

[c]Maximum 21 points, minimum 0 points.

[d]Maximum 3 points, minimum 0 points.

for males and females on the DHI, VSS, and HADS are shown in Figures 1–3. In general, females scored higher than males in measures of handicap, somatization/autonomic symptoms, anxiety, and depression. These differences reached significance only for the DHI total score (t = –2.0, df = 61,

Figure 1. Histogram illustrating mean (SD) effect of subject gender differences on the Dizziness Handicap Inventory total score.

Figure 2. Histogram illustrating mean (SD) gender differences on the Vertigo Symptom Scale—Somatic/Autonomic Symptoms score.

Figure 3. Histogram illustrating mean (SD) gender differences in the Hospital Anxiety and Depression Scale (HADS)—A and HADS-D scores.

p = .04) and the somatic/autonomic subscale of the VSS (t = –2.9, df = 61, p = .005).

Predictors of Dizziness Handicap

Pearson product–moment correlations were calculated to determine whether predictive relationships existed among self-perceived dizziness handicap, psychological comorbidities, and coping styles.

Dizziness Handicap and Somatization/ Autonomic Symptoms

The total scores on the DHI demonstrated significant correlations with the somatic/autonomic subscale of the VSS (r = 0.52, p < .001). As complaints of somatic/autonomic symptoms increased, dizziness handicap increased.

Dizziness Handicap and Anxiety and Depression

The total scores on the DHI also showed significant correlations with the anxiety (r = 0.52, p < .001) and depression (r = 0.60, p < .001) subscales of the HADS. As anxiety or depression increased, dizziness handicap increased.
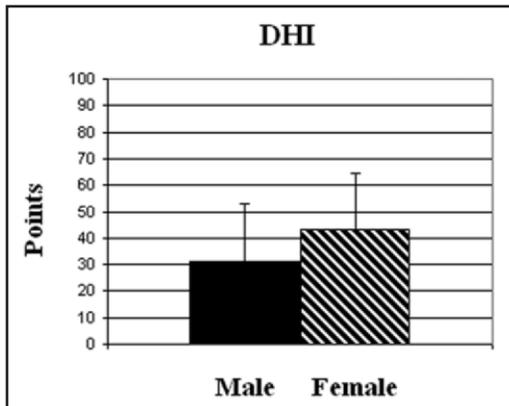
Dizziness Handicap and Coping

The DHI total score showed weak to moderate positive correlations with all the WOCQ subscales with the exception of Distancing and Planful Problem Solving. Table 3 shows the correlations between the DHI total and each of the eight WOCQ subscales.
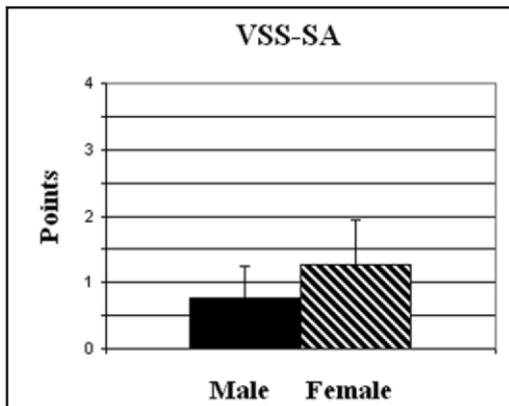
The significant correlations between the DHI and WOCQ ranged from 0.25 to 0.49. The highest correlation was between Escape/Avoidance and the total DHI score (r = 0.49, p < .001). Overall, the more coping strategies reportedly used, the greater the self-perceived dizziness handicap.
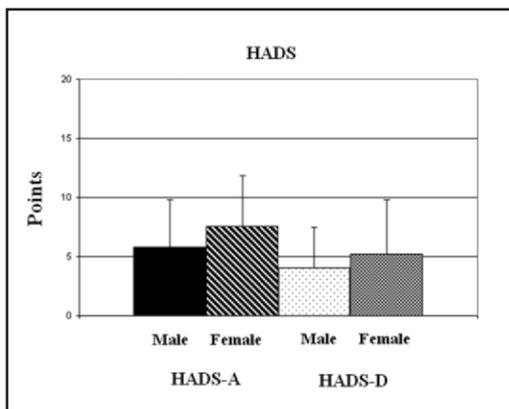
DISCUSSION

The present study was conducted to determine (1) how often psychological comorbidities (e.g., anxiety and depression) are observed in a cohort of dizzy patients, (2) to what extent these comorbidities vary in different patient groups, (3) whether the comorbidities are affected by gender or age, and (4) to what extent comorbidities predict self-reported dizziness handicap. The results

of this investigation have shown that (1) moderate self-perceived dizziness handicap and both anxiety and depression are observed often in dizzy patients; (2) self-reported indexes of handicap and psychological comorbid conditions do not differ among patient groups; (3) older patients tend to confront adversity more than younger patients; (4) women show greater amounts of anxiety; and finally, (5) although quantitative measures of vestibular function *are not* predictive, the magnitude of psychological comorbid conditions *is* predictive of self-reported dizziness handicap.

Self-Reported Dizziness Handicap and Psychological Comorbidities in Dizzy Patients

In the present investigation, on average, patients presented with a moderate perceived level of dizziness handicap (i.e., DHI total score was 40 [Jacobson and Newman, 2008]), regardless of whether quantitative evidence of vestibular impairment was identified during testing. Similarly, Robertson

Table 3. Pearson Correlation Analysis Showing the Relationships between the Dizziness Handicap Inventory Total and Ways of Coping Questionnaire Subscales

Ways of Coping Questionnaire Subscale	r
Confrontive Coping	0.25*
Distancing	0.20
Self-Controlling	0.27*
Seeking Social Support	0.31**
Accepting Responsibility	0.30**
Escape/Avoidance	0.49**
Planful Problem Solving	0.23
Positive Reappraisal	0.37**

* $p < .05$; ** $p < .01$.

and Ireland (1995), who examined 101 consecutive patients referred for neuro-otologic examination due to complaints of dizziness, found that most patients, regardless of diagnosis, also demonstrated some level of preexisting handicap (i.e., the reported average DHI total score was 38.8 ± 22.6).

We also observed that 22.2 percent of the subjects demonstrated evidence of anxiety and 11.1 percent showed evidence of depression. This is quite high in comparison to the reported values of 7 percent anxiety and 5 percent depression observed among healthy control subjects (Hermann, 1997). However, the values observed in the present investigation are consistent with those reported by other investigators using similar patient samples (see Table 4). For example, Yardley and colleagues (1992b) used the HADS screening measure to assess anxiety and depression in 127 patients attending neuro-otology clinics with complaints of vertigo. Similar to our findings, they report that 27.8 percent of their sample showed evidence of anxiety. Further, 7.1 percent of their sample showed evidence of depression. Grunfeld and colleagues (2003) also examined anxiety and depression using the HADS in a sample of 91 patients with complaints of vertigo or dizziness. Twenty-nine percent of their sample showed evidence of anxiety, and 17 percent showed evidence of depression.

Self-Reported Dizziness Handicap and Psychological Comorbidities in Subgroups of Dizzy Patients

No significant differences were found between patient subgroups in measures of self-reported dizziness handicap. These results confirm previous findings that conventional balance function tests are inadequate for evaluating the disabling/handicapping effects of vestibular impairments (e.g., Jacobson and Newman, 1990; Yardley et al, 1992a; Robertson and Ireland, 1995).

Table 4. Summary of Comparison of Anxiety and Depression in Studies of Both Normal and Dizzy Samples

Study	Anxiety	Depression	Sample Type
Hermann, 1997	7.1%	5.0%	Normal
Yardley et al, 1992b	28.8%	7.1%	Dizzy
Grunfeld et al, 2003	29.0%	17.0%	Dizzy
Current Study	22.2%	11.1%	Dizzy

In a similar vein, the magnitude of psychological comorbidities did not differ between subgroups of dizzy patients. Yardley and colleagues (1999) compared VSS scores between patients with abnormal and normal balance function testing. As in the current study, they found no difference in somatic/autonomic scores of patients with normal and those with abnormal vestibular test results. In other words, somatic/autonomic symptoms occur equally frequently in those with and without quantitative evidence of vestibular impairments who complain of dizziness. Somatic/autonomic symptoms are also correlated with self-reported measures of dizziness handicap. This is consistent with the evidence showing that somatic and autonomic symptoms contribute to the magnitude of patient-reported handicap (Yardley et al, 1992b; Yardley et al, 1995; Yardley et al, 1999).

Effect of Age and Gender on Self-Reported Dizziness Handicap and Psychological Comorbidities

In most instances, subject age did not have a significant effect on self-reported dizziness handicap, psychological comorbidities, or coping style. These results suggest that older patients reported using Confrontive Coping more often than younger patients. However, it is noteworthy that the Confrontive Coping subscale consisted of the least frequently used responses and, anecdotally, many of the subjects expressed confusion concerning items on that coping scale. For these reasons, this finding should be interpreted with caution.

A gender effect was observed in the current study. Women reported greater levels of handicap and emotional distress when compared to men. We observed that on both the DHI and the VSS-SA subscale, women reported greater handicap and experienced greater somatic/autonomic symptoms than men. There is support for this finding in the existent literature. For example, it is known that women report a greater number of health complaints and score higher on questionnaires measuring symptoms and handicap (Holmberg et al, 2005). A similar finding has been reported by Yardley and colleagues (2001), who investigated dizziness in a large community sample and found that women were more likely to report dizziness than men. More specifically, Robertson

and Ireland (1995) evaluated a sample of patients referred for neuro-otologic assessment and found that women scored significantly higher on the DHI. Further, anxiety disorders affect women more frequently than men (Robins and Regier, 1991), and anxiety covaries with handicap (e.g., Yardley et al, 1992b; Hagnebo et al, 1999). Additionally, women are seen more often than men in dizziness clinics (e.g., Jacobson and Newman, 1990; Yardley et al, 1992b).

Relationships among Self-Reported Dizziness Handicap, Psychological Comorbidities, and Coping

In the present study, self-reported measures of somatization, anxiety, and depression were all correlated with dizziness handicap. However, for 47 percent of the study sample the current vestibular test battery found no abnormal results in spite of the presence of symptoms of dizziness, imbalance, or unsteadiness. This finding confirms previous results of poor agreement between vestibular test results and reported symptoms. For example, Yardley and colleagues (1992a) found that only 56 percent of their "dizzy" sample had definite signs of vestibular dysfunction on quantitative testing. These results highlight the role that psychological factors may play in attending to, or complaining about, dizziness. That is, measures of anxiety, depression, somatization, and dizziness handicap were more closely linked to the complaint of dizziness and less with objective assessments of vestibular impairments.

The choice of coping strategy among dizzy patients was found to correlate with self-reported measures of dizziness handicap (i.e., r = 0.25−0.49). Confrontive Coping, Self-Controlling, Seeking Social Support, Accepting Responsibility, Escape/Avoidance, and Positive Reappraisal were all positively correlated to handicap. In other words, those who reported using more of these coping strategies to deal with their dizziness also reported greater dizziness handicap. No coping strategy was negatively correlated with less dizziness handicap. Similarly, the results of studies examining coping strategies in tinnitus sufferers suggest that "effective coping" styles were not necessarily useful in alleviating symptoms but "maladaptive coping" (i.e., avoidance) led to increased levels of tinnitus severity,

anxiety, and depression (Budd and Pugh, 1996). In the current study, the strongest correlation was between self-reported handicap and the Escape/Avoidance coping strategy (e.g., r = 0.49, p < .001). One could easily argue that avoiding movement to reduce vertiginous symptoms could only serve to increase handicap.

In general terms, Escape/Avoidance describes "wishful thinking and behavioral efforts to escape or avoid the problem" (Folkman and Lazarus, 1988, p. 8). In terms of dizziness, this may mean sleeping more than usual or restricting social activities (i.e., avoiding situations that may provoke the dizziness) or simply wishing dizziness would cease spontaneously (i.e., without medical or surgical treatment). Understandably, these strategies would do little to decrease handicap and in the present study correlated with higher self-reported dizziness handicap. Carver and colleagues (1993) found that both cognitive avoidance and behavioral avoidance of a problem, such as denial or disengagement, are related to poorer adjustment to disease. The results of the current investigation support this finding. In other words, those with higher self-reported handicap scores used Escape/Avoidance coping strategies to deal with their stressful situation. Similarly, Hagnebo and colleagues (1999) evaluated coping strategies and handicap in Ménière's disease patients and also found that Escape/Avoidance was positively correlated with self-reported dizziness handicap and to anxiety sensitivity. Interestingly, the tenets of vestibular rehabilitation therapy (VRT) encourage patients to confront dizziness symptoms in an effort to more effectively compensate for vestibular impairment. In this regard, investigators have reported that physical inactivity or avoiding movements that may cause vertiginous symptoms may contribute to disability and psychosocial distress (Shepard and Telian, 1995).

SUMMARY

Comorbid conditions (e.g., anxiety, depression) are observed often in a sample of patients referred for assessment of vertigo, dizziness, disequilibrium, and postural instability. In addition, metrics of dizziness handicap, anxiety, depression, and somatization/autonomic symptoms do not differ in subgroups of patients complaining of dizziness, regardless of whether quantitative evidence of vestibular impairment is observed. Patient age was not a significant factor, though gender was, as women tended to report greater handicap and somatic/autonomic symptoms. DHI total scores were correlated with patients' complaints of somatic/autonomic symptoms, anxiety, depression, and coping strategies. However, there were no predictive relationships between dizziness diagnostic groups and the above-mentioned variables. Despite the statistically significant correlations between self-reported dizziness handicap and psychological comorbidities, only ~26–36 percent (r = 0.51–0.60) of the variance in self-reported dizziness handicap is accounted for by these comorbidities. Additionally, coping strategies accounted for ~6–24 percent (r = 0.25–0.49) of the variance in dizziness handicap. Further, VRT may be a beneficial treatment to alleviate dizziness symptoms in individuals demonstrating maladaptive coping strategies, specifically avoidance strategies. Our findings suggest that quantitative semiobjective measures (i.e., electronystagmography, rotational testing, VEMP, etc.) of vestibular impairments should be augmented with subjective self-assessment measures of common comorbid conditions because these conditions have the ability to affect the intensity of dizziness, can be managed (i.e., medically and nonmedically), and represent a unique piece of information important for the treatment of dizzy patients.

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