Quality of Life and
Panic-Related Work Disability in
Subjects With Infrequent Panic and Panic Disorder

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Background: Panic disorder is associated with poor quality-of-life (QOL). However, little is known regarding the impact of panic disorder or infrequent panic on work-related disability. The purpose of this study was (1) to document QOL and panic-related work disability in subjects with panic disorder or infrequent panic, (2) to identify independent predictors of QOL and disability, and (3) to compare outcomes in subjects with panic disorder versus infrequent panic.

Method: This cross-sectional community survey included 97 subjects with panic and matched controls. Subjects were screened for panic disorder or infrequent panic using the Structured Clinical Interview for DSM-III-R. The QOL questionnaire addressed life satisfaction as well as panic-related work disability. A structured interview assessed possible predictors of impaired QOL including comorbidity, illness attitudes and behaviors, coping style, family measures, and symptom perceptions.

Results: QOL was significantly (p ≤ .001) poorer in subjects with panic than in controls. Comorbid depression, social support, worry, and severity of chest pain predicted QOL. Although subjects with infrequent panic reported a lower QOL than controls, subjects with panic disorder had more panic-related disability and poorer QOL than those with infrequent panic. Predictors of work disability included panic frequency, illness attitudes, family dissatisfaction, and gender.

Conclusion: Although both infrequent panic and panic disorder impact QOL and disability, panic disorder has a greater effect. Using predictors, patient education, provision of support, and focused therapy could potentially improve QOL and disability.

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The quality-of-life (QOL) in subjects with panic disorder is impaired. Self-perceived impairment of physical[1] and emotional health[1,2] is reported by subjects with panic disorder; 35% report their physical health as fair-to-poor, while 38% report their emotional health as fair-to-poor. In addition, marital strife occurs, with 12% reporting "not getting along with their spouse" and 19% "seldom or never confiding in their spouse."[1] In a 7-year follow-up study, 26% of subjects with panic disorder were moderately to severely socially impaired.[3] Over 25% of subjects with panic disorder are financially dependent, receiving welfare or disability.[1] Panic-related work disability is a predictor of care-seeking, in general,[4] and presentation to family physicians, in particular.[5]

Comparing QOL measures between subjects with panic disorder versus other psychiatric conditions, subjects with panic disorder more frequently rated their physical and emotional health as fair-to-poor and were more frequently financially dependent.[6] These findings are similar to those found when comparing subjects with panic disorder versus those having major depression without panic disorder.[7] Compared with patients who have other anxiety disorders, panic disorder patients showed the most severe psychosocial impairment and worst outcomes.[8] However, Ballenger et al.[9] showed that treatment of panic disorder with alprazolam produced improvement in work, social, and family disability.

However, little is known about life satisfaction or overall QOL[10] in subjects with infrequent panic—individuals with panic attacks but not panic disorder. In addition, the impact of both panic disorder and infrequent panic on work performance is not known. The purpose of this study was to (1) document QOL and panic-related work disability in a predominantly Mexican American community sample, (2) identify independent predictors of QOL and disability, and (3) compare subjects with panic disorder and infrequent panic in terms of outcomes.

METHOD

Using sampling procedures similar to those of the Epidemiologic Catchment Area (ECA) study,[11] the Panic Attack Care-Seeking Threshold (PACT) study[12] randomly

selected adults (age ≥ 18 years) from randomly selected households. Differing numbers of subjects from 18 census tracts in San Antonio, Texas, were selected such that the sample was representative of the U.S. population for age, gender, and race. Owing to the size of the Hispanic population in San Antonio, we did not try to represent the ethnicity of the United States. A more detailed description of the sampling methods used has been previously presented.[12]

Subjects were screened using the panic disorder section of the Structured Clinical Interview for DSM-III-R (SCID).[13] Subjects who had experienced unexpected discrete periods of intense fear or discomfort within the past month associated with at least four panic symptoms were classified as having panic attacks. Subjects were further separated into those with at least four attacks in 4 weeks or 1 month of persistent fear (panic disorder) and those with less frequent attacks (infrequent panic).

For each subject with panic attacks, a control subject was randomly selected from those screened with the SCID and found not to have panic symptoms. Controls were matched to subjects with panic in a cohort fashion based on age (within 3 years), gender, and ethnicity.

All participants completed a structured interview concerning panic characteristics, symptom perceptions, and psychiatric comorbidity, including the Symptom Checklist-90 (SCL-90)[14] and the SCID section for major depressive episodes, illness attitudes and behaviors, family measures, and coping skills. The specific measures used have been described previously.[12] Demographic information including current occupation, annual income, and number of chronic medical problems was also obtained.

A QOL questionnaire was developed for this study including measures of current QOL as well as panic-related work disability. Current life satisfaction was measured on a scale from 1 (dissatisfied) to 7 (satisfied). In addition, participants were asked how many "good days" they had in the previous week and how many days they had missed from work for any reason in the previous month. Participants were asked to rate their current work capacity on a visual analog scale from 0 (no capacity) to 10 (most capable ever felt). Principal components factor analysis showed that these four questions loaded on a single factor. These four questions were combined into an index of current QOL by rescaling each on a 0- to 1-point scale and summing them. The Cronbach's alpha of the QOL index is .60. Construct validity of the QOL index is suggested by its inverse correlations with all nine SCL-90 scales (p ≤ .0001) and the total stress score of the Duke Social Support and Stress Scale[15] (p ≤ .0001). Subjects with panic were also asked to rate their work capacity prior to the onset of panic.

Panic-related work disability was measured through a series of questions concerning work-related consequences of panic. Principal components factor analysis showed that five "yes/no" questions—(1) incapable of work, (2) decline in work quality, (3) change in jobs, (4) time off work, and (5) loss of promotion—loaded on a single factor. A work disability index was created by summing responses to these five questions (Kuder-Richardson 20 = 0.74). Those subjects that reported changing occupations owing to their panic were asked to provide a reason. A measure of monthly productivity per group was calculated as the product of percent of group in workforce, current mean work capacity (%), and mean number of days worked. Construct validity is suggested by its correlation with the number of days missed in the previous month (r_s = .19, p = .035) and decline in work capacity (r = .24, p = .009).

Differences between the panic disorder and infrequent panic groups were sought using chi-square and unpaired t tests. Paired comparisons between panic subjects and controls were analyzed using McNemar's, Wilcoxon signed-rank, and paired t tests. The relationship between phobic avoidance and work disability was investigated using Mann-Whitney and Kruskal-Wallis testing. Associations were analyzed using Pearson and Spearman correlations based on the level of data used (interval vs. ordinal). Using a one-tailed alpha of .05 because previous work suggests poor QOL in panic patients, the t tests have statistical powers of 74%, 84%, and 96% when seeking a medium effect size comparing controls against subjects with panic disorder, infrequent panic, and any panic (panic disorder and infrequent panic combined), respectively. A .05 < p ≤ .10 was deemed to show a trend toward significance. Stepwise multiple regression was used to identify independent predictors of life satisfaction, total QOL, and work disability using variables significant on univariate analysis.

RESULTS

Because panic and control groups were matched, they are demographically similar in terms of age (mean age = 39.8 years), gender (78% female), and ethnicity (30% non-Hispanic white, 56% Hispanic, and 14% black). Although not statistically significant, the panic group had a lower socioeconomic status (panic mean = 62.5, control mean = 59.3 Hollingshead score[16]) and were less likely to be married (50% vs. 66%). The mean number of self-identified chronic medical problems was 2.0 for the panic group and 1.8 for the control group.

Monthly group productivity scores were 19.42 for controls, 11.17 for the infrequent panic group, and 8.69 for the panic disorder group. Table 1 compares QOL variables among panic disorder, infrequent panic, and control groups. On all five measures, the panic group had a poorer QOL than did the control group. On each variable, the infrequent panic group scored intermediate to the panic disorder and control groups. When comparing current work

Table 1. Quality-of-Life (QOL) Differences

| | QOL Mean Value | | | p Value | | |
| | Panic Disorder (PD) (N = 42) | Infrequent Panic (IP) (N = 55) | Controls (N = 97) | | PD vs Controls | IP vs Controls |
Variable (Range)				PD vs IP		
Life satisfaction (1–7)	3.5	4.3	5.8	NS	≤ .001	≤ .001
"Good days" in past week (0–7)	3.1	4.2	5.4	≤ .05	≤ .001	≤ .001
Days of work missed in past month (0–30)	2.2	0.8	0.4	NS	NS	NS
Current work capacity (0–10)	5.9	7.5	8.4	≤ .05	≤ .005	NS
Total QOL scale (0–4)	2.4	2.9	3.4	≤ .01	≤ .001	≤ .001

Table 2. Current Employment Status (%)

| | Panic Disorder (PD) (N = 42) | Infrequent Panic (IP) (N = 55) | Controls (N = 97) | p Value[a] | |
| | | | | PD vs IP | IP vs Controls |
Employment					
Full-time	36	15	33	≤ .05	≤ .05
Part-time	10	31	20	≤ .05	≤ .1
Self-employed	7	5	5	NS	NS
Housewife	33	33	25	NS	NS
Retired	0	7	11	NS	≤ .1
Unemployed	12	7	2	NS	NS
Other	2	2	3	NS	NS

[a]All PD versus Control differences are not significant.

Table 3. Prevalence of Panic-Related Work Disability

Disability	Panic Disorder (N = 42)	Infrequent Panic (N = 55)
Would work more without panic attacks	48%	44%
Panic caused you to be incapable of work	64%[a]	25%
Panic caused decline in work quality/efficiency	64%[b]	35%
Panic caused you to change jobs	43%	24%
Panic caused you to take time off from work	50%[a]	17%
Panic caused you to lose a promotion	21%	9%
Total work disability score (mean)	2.4[a]	1.1

[a]PD vs. IP: p ≤ .001.
[b]PD vs. IP: p ≤ .005.

Table 4. Responses From the PD and IP Subjects to "Why Did You Change Occupations?" (N = 18)*

Response	Number of Subjects
Work-related	
Incapable of working	2
Lost job	3
Work environment	5
Could not get a job	3
Personal	
Avoid people	7
Retired	1
Convenience	1
Fear/anxiety	2
Felt safer close to home	1
Physical illness (back)	1

*Some subjects reported more than one reason.

capacity with capacity prior to onset of panic, the mean drop in capacity was 1.25 (paired t = 2.89, p = .0048). Although Table 1 shows that current work capacity is lower in the panic versus control groups, the current capacity in controls did not differ from capacity prior to panic onset (mean = 0.30, paired t = 0.93, p > .1) in panic subjects.

Table 2 compares the panic disorder, infrequent panic, and control groups based on self-reported current employment status. Control subjects were more frequently retired but less often unemployed. Although none of the panic disorder versus control comparisons were significant, the infrequent panic group reported less frequent full-time employment and retirement than the control and panic disorder groups. Using Hollingshead classification for the status of occupations, no differences in status of occupation or socioeconomic status among groups was found. However, control subjects reported a higher annual in-

come than did panic subjects (Wilcoxon, p = .019); this difference held for both the panic disorder (Wilcoxon, p = .10) and infrequent panic groups (Wilcoxon, p = .043). The panic disorder and infrequent panic groups did not significantly differ in income.

Table 3 presents the panic-related work disability reported in panic disorder and infrequent panic groups. Panic disorder subjects more frequently reported work disability due to their panic than did infrequent panic subjects. Of the 46 subjects with panic that reported a decline in work quality/efficiency, 21 (46%) were told of their decline by their employers. Similarly, of the 31 subjects with panic that reported changing jobs due to panic, 18 (58%) said that they had changed occupations as well. Table 4 presents the reasons for changing occupations as given by subjects. Although 10% (N = 2) of those chang-

Table 5. Independent Predictors of Outcome Among PD and IP Subjects Using Multiple Regression (Odds Ratio)*

Predictor	Life Satisfaction	Total QOL Scale	Total Work Disability
Panic characteristics			
Severity of chest pain	0.80[a]	0.80[a]	…
Severity of paresthesia	…	…	1.45[c]
Panic frequency	…	…	1.45[c]
Panic appraisal			
Predictability	…	1.23[a]	…
Self-caused	…	…	0.81[b]
Comorbidity			
Presence of major depression	…	0.75[c]	…
Level of depression	0.55[c]	…	…
Level of anxiety	1.43[a]	…	…
Illness attitudes			
Worry	0.83[a]	0.72[c]	…
Effect of symptoms	…	…	1.30[c]
Family measures			
Total support	1.20[a]	1.23[a]	…
Dissatisfaction with cohesion	…	…	1.23[c]
Demographics			
Gender (male)	…	…	1.31[c]
R^2	.364	.361	.536

*Symbol: … = no association found.
[a]$p \le .05$.
[b]$p \le .01$.
[c]$p \le .005$.

ing occupations had improved the status of their occupation, 25% (N = 5) chose an occupation of lower status (Wilcoxon, p = .055).

Although total QOL is inversely related to total work disability (r = –.31, p = .002), there was no association between life satisfaction and work disability. Table 5 presents the independent predictors of life satisfaction, total QOL, and work disability. As expected, life satisfaction and total QOL have several predictors in common—severity of chest pain during panic, presence of major depression, total family and nonfamily support, and worry. Total work disability has a different set of predictors. However, illness behaviors, coping skills, and socioeconomic status variables were not predictors of any of these three outcomes.

None of the interactions between panic and QOL varied with ethnicity. Although Hispanics reported lower occupational and socioeconomic status than non-Hispanic whites and blacks, no differences were statistically significant.

DISCUSSION

Subjects with panic scored lower on all of the QOL measures used in this study. Although prior to onset of panic, subjects rated their work capacity as similar to that of controls, since the onset of panic, their work capacity had significantly dropped. Previous QOL studies in panic disorder have focused on perceived physical/emotional health,[1,2] social[1–3,17] and marital functioning,[1,8] financial dependency,[1,2,18] and work disability.[17–19] However, only

one study[2] assessed life satisfaction. Our study not only supports the previous findings but complements previous studies by assessing life satisfaction and composite QOL.

Subjects with panic were more frequently unemployed but less frequently retired. Although the status of their occupations did not differ from that of controls, their income was less. The 36% full-time employment found in panic disorder subjects in our study lies within the 23% to 45% range found previously.[2,18] The high unemployment rate has also been reported before.[8] Although income itself has not been previously studied, the prevalence of financial dependency has ranged from 7% to 27% in previous work.[1,2,18]

The frequency of panic-related work disability has been addressed before. Levels of work/social disability are high in subjects with panic disorder across all countries but especially in the United States.[17] Ormel et al.[19] reported that 58% of subjects with panic disorder had occupational role dysfunction and 55% had physical disability. Of the common mental disorders, panic disorder had the highest rate of occupational role dysfunction. In the panic disorder group, 64% reported a decline in work quality, compared with 83% in previous studies.[18] Sherbourne et al.[20] found that, although patients with panic disorder reported levels of physical functioning similar to population norms, levels of role functioning were lower in patients with panic disorder than in those with chronic medical illnesses. Our study found that 64% of panic disorder subjects were incapable of work due to panic and 48% said that they would work more without panic attacks. Previous studies have reported that 53% of patients were not working owing to panic, 37% had lost or quit their jobs owing to panic, and 78% wanted to work more.[18] In addition, 43% had been incapable of work for at least 1 month at some point,[18] and 9% were unemployed but not looking for work owing to emotional problems—a rate higher than that for other psychiatric disorders.[6] Although the mean number of days missed from work was 2.2 per month in our study, Ormel et al.[19] found a mean of 10 disability days per month for subjects with panic disorder, which is the highest number reported for any of the common mental disorders. Despite no significant panic disorder versus control differences in socioeconomic status or status of occupation, subjects with panic disorder did have a lower income. Edlund and Swann[18] found that 67% of panic disorder patients had lost income owing to panic. From an economic standpoint, panic disorder results not only in higher health care costs,[21] but indirect costs such as lost earning time and productivity, as well.[22] Edlund and Swann[18] found that panic disorder resulted in work disability costs of over $33,000 per patient. Salvador-Carulla et al.[23] found that 61 patients with panic disorder incurred $29,000 in annual health care costs, while the 29 working patients lost $53,000 annually in lost productivity.

In our study, life satisfaction was inversely related to depression, worry, and severity of chest pain but positively associated with support and anxiety level. Although previous studies have not focused on predictors of satisfaction, Massion et al.[2] found that overall satisfaction was lower in panic disorder patients that had generalized anxiety disorder as well. Total QOL score was also dependent upon depression, worry, severity of chest pain, and social support. However, two other factors—the perception that depersonalization is life-threatening and the predictability of panic attacks—were also significant. Wittchen and Essau[8] found that social role dysfunction in panic disorder was primarily related to depressive symptoms. Other studies have found that recent panic disorder had greater impact on QOL than did past panic disorder[7] and that panic symptoms and depression correlated with social adjustment. In addition, social adjustment correlated with interpersonal sensitivity and duration of panic.[3]

Panic-related work disability was dependent on a different set of predictors. Not only did males report more disability, but panic frequency, severity of paresthesias, and effect of symptoms (the extent to which bodily symptoms interfere with activities) were also positive predictors. While dissatisfaction in family cohesion and treatment experience—how readily one uses the health care system—also predicted disability, perceived self-causation of panic was inversely related to disability. Edlund and Swann[18] reported that complete disability was most common in males. Noyes et al.[3] found that symptom-related disability in panic disorder correlated with neuroticism, depression, interpersonal sensitivity, and social impairment. Subjects were less socially impaired if they had fewer symptoms, fewer panic attacks, and less avoidance. Our findings in work disability are similar to those of Noyes et al.[3] in social impairment. Telch et al.,[24] however, found that disability correlated with anxiety levels but not panic frequency.

Our study failed to find a relationship between ethnicity and QOL or work disability. Although previous studies have not focused on Hispanic-Americans with panic as this study did, disability in subjects with panic has been studied in Hispanic countries. Buller et al.[17] found that subjects with panic disorder in Brazil, Columbia, Mexico, and Spain reported average levels of work and social disability when compared with subjects with panic disorder from other countries. Similarly, Ormel et al.[19] reported that subjects with panic in Brazil and Chile had lower levels of occupational and physical dysfunction than did subjects with panic in other countries. Consequently, there is no evidence of excess panic-related disability in Hispanic subjects.

The relationship between QOL, work disability, and infrequent panic is complex. Whereas panic disorder was associated with poorer QOL and more work disability than was infrequent panic, subjects with infrequent

panic reported lower income levels and less full-time employment. Although panic frequency at the time of the worst attack was a predictor of work disability, panic disorder was not. In all measures of QOL, the infrequent panic group mean was intermediate to the means of the control and panic disorder groups. In the only previous study reporting QOL comparisons for subjects with panic disorder and infrequent panic, subjects with infrequent panic reported poorer physical and emotional health than controls as well as higher rates of financial dependency and work incapacity secondary to emotional problems. With the exception of emotional health, subjects with panic disorder reported poorer QOL than did subjects with infrequent panic.[6] Thus, in general, subjects with infrequent panic report a poorer QOL and more work disability than controls. However, the infrequent panic group generally fares better than the panic disorder group. The finding that the panic disorder group reported more full-time but less part-time employment than the infrequent panic group is surprising. This finding is supported by the lower income level of subjects with infrequent panic. Both groups reported similar belief that they would work more if they were panic-free. Infrequent panic may represent a milder form of panic disorder or a consequence of other psychiatric conditions.

Our study has several limitations. In addition to the cross-sectional design, the overall measures of QOL and panic-related work disability may limit the results. Although the measures used do have moderate internal consistency, no assessment of validity has been made. Gill and Feinstein,[10] in their review of QOL measures, found that few instruments met their criteria. Their recommendations were that QOL measures should (1) include global ratings, (2) allow subjects to rate the severity and importance of each item, and (3) allow supplemental items to be incorporated.[10] The scales used in our study do include global ratings. Gill and Feinstein found that only 61% of QOL measures included a composite QOL score and only 17% included a global QOL rating by the subject.[10] The measure we used included both. Although we assessed perceived work capacity, we did not determine current disability level. Ormel et al.[19] previously found that perceived physical health did not predict psychopathology or disability. The SCID used produced DSM-III-R diagnoses. With the changes in DSM-IV, many subjects with infrequent panic may now meet criteria for panic disorder under DSM-IV. Although our subjects with infrequent panic did have recurrent panic attacks, only 25 (45%) have evidence of a 1-month impact as required by DSM-IV. Therefore, many of this group may represent subsyndromal panic. Finally, the small sample size limits our ability to detect differences in variables with skewed distributions (e.g., days missed).

In conclusion, our study confirms the negative impact of panic on QOL and work. This study has additional im-

plications. It demonstrates that even infrequent panic can affect QOL. Based upon predictors, QOL in subjects with panic could be enhanced through education to reduce the patient's level of worry, provision of social support, and treatment of comorbid depression. Work disability may improve via the reduction of panic frequency and cognitive therapy directed at the impact symptoms have on work. These therapeutic strategies may improve QOL while reducing disability and need to be tested in future research.

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