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When Anxiety Symptoms Masquerade as Medical Symptoms: What Medical Specialists Know about Panic Disorder and Available Psychological Treatments

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Abstract Under-recognition of somatic symptoms associated with panic in primary care settings results in unnecessary and costly diagnostic procedures and inappropriate referrals to cardiologists, gastroenterologists, and neurologists. In the current study specialists' knowledge regarding the nature and treatment of panic were examined. One-hundred and fourteen specialists completed a questionnaire assessing their knowledge about panic attacks, including their perceptions of psychologists' role in treating panic. Respondents answered 51% of knowledge items correctly. Although most knew the definition of a panic attack, they knew less about clinical features of panic and its treatment. Specifically, whereas 97.4% believed medication effectively relieves panic symptoms, only 32.5% knew that cognitive-behavioral therapy (CBT) is a first-line treatment. Only 6% reported knowing how to implement CBT, and only 56.1% recognized that psychologists could effectively treat panic. These findings demonstrate significant gaps in specialists' knowledge about panic and the need to enhance physician knowledge about panic attacks and their treatment.

Keywords Physicians · Knowledge · Panic attacks · Panic disorder · Treatments

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Introduction

Panic attacks involve the sudden onset of physical and psychological symptoms that rapidly peak within minutes. According to the *Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition (Text Revision) (DSM-IV-TR*; American Psychiatric Association [APA], 2000), a panic attack involves a sudden rush of fear that peaks within minutes and is accompanied by at least four of the following symptoms: heart palpitations, sweating, trembling/shaking, shortness of breath, choking sensations, chest pain/discomfort, nausea/abdominal distress, dizziness, derealization, fear of losing control/going crazy, fear of dying, numbing/tingling sensations, and chills/hot flushes. The experience of panic attacks is physically and emotionally debilitating and may lead to the development of panic disorder (PD). A diagnosis of PD requires (1) the recurrence of unexpected panic attacks accompanied by (2) significant concern or worry about additional attacks or implications of the attack, or a change in behavior because of the attacks. Prevalence estimates of PD range between 1% and 3.5%, and age of onset is typically during late adolescence and the mid-30's (APA, 2000). Although chronic, the disorder waxes and wanes, so that some individuals may experience a period of remission only to have symptoms return later.

Despite the availability of effective pharmacological and psychological treatments, PD and panic attacks

continue to be one of the most costly anxiety disorders for the healthcare industry (Roy-Byrne et al., 2005). Perhaps because the initial symptoms of a panic attack tend to be cardiovascular and pulmonary in nature (Katerndahl, 1988), estimates suggest that 70–85% of patients with PD initially seek help from primary care settings (Katerndahl & Realini, 1995; Leon, Olfson & Portera, 1997), with 43% initiating contact in emergency rooms (Ballenger, 1998). These estimates are consistent with data from the Epidemiologic Catchment Area study, indicating that patients with PD are up to eight times more likely to use medical services than persons without PD (Simon & VonKorff, 1991). Studies have also found that a high proportion of undiagnosed patients with PD present to primary care (61%) (Spitzer et al., 1994) and emergency rooms (98%) (Fleet, Dupuis, Marchand, Burelle, & Beitman, 1997) for help. Additionally, data from the World Health Organization Collaborative Project in primary care revealed that half of all patients who met criteria for PD were not diagnosed with the disorder (Sartorius et al., 1993).

Clearly, delay in accurate diagnosis is costly not only to the individual but to the healthcare industry. A number of studies have demonstrated the high utilization rates of medical services among persons with PD, including persons with panic attacks who do not meet full criteria for the disorder (Zaubler & Katon, 1998). For example, Siegel, Jones, and Wilson (1990) reported that persons with PD had approximately seven times the number of medical appointments as the general population. Delays in referring patients to mental health professionals (Katon, 1992) further affect the healthcare economy. A detailed cost analysis by Katon, Von Korff, and Lin (1992) revealed that high-use patients with PD represented 29% of primary care visits, 52% of outpatient specialty visits, 48% of inpatient hospitalizations, and 26% of prescriptions. In support of these findings, Simpson, Kazmierczak, Power, and Sharp (1994) reported that PD patients in primary care had significantly more medical visits, hospital admissions, and diagnostic tests performed than matched controls. These patients also received more medications and more referrals to mental health specialists and made more self-referrals to the emergency room.

Lack of familiarity with panic symptoms (Carter, Servan-Schreiber, & Perlstein, 1997) often leads primary care providers to refer patients with PD to medical specialists for further evaluation (Katon, 1996). Referrals to cardiologists, gastroenterologists, and neurologists are most common, since typical complaints among PD patients include chest pain, tachycardia, headaches, dizziness, epigastric pain, and irritable bowel syndrome (Barsky, Delamater, Clancy, Antman, & Ahern, 1996). Various studies substantiate the frequency of such referrals, demonstrating that 25% of patients seen by cardiologists have PD symptoms (Barsky et al., 1996), while 44% of patients treated for irritable bowel syndrome by gastroenterologists (Lydiard, Fossey, Marsh, & Ballenger, 1993) and approximately 15% of persons with headache symptoms meet full criteria for PD (Stewart, Shechter, & Liberman, 1992). These estimates are likely higher for people who experience panic attacks but do not meet full criteria for the disorder.

Some research suggests that panic attacks can contribute to and exacerbate medical conditions such as coronary heart disease (Kawachi et al., 1994; Smoller et al., 2007). For example, one study found a relationship between panic attacks and increased noradrenergic firing in the locus coeruleus (Svensson, 1987). However, it is not clear that the increased presence of norepinephrine during panic attacks, which is also present in other forms of anxiety, directly causes panic attacks. Instead, Barlow proposed that an interaction of biological vulnerability and psychological dysfunction results in the development of panic attacks. Indeed, much research has highlighted the role of catastrophic cognitions regarding the physical, mental, and social consequences of panic attacks in the development and maintenance of this disorder (Barlow, 2002; Clark, 1986; Goldstein & Chambless, 1978; Hicks et al., 2005; Salkovskis, 1988). Relatedly, anxiety sensitivity, which is the fear that anxiety will lead to long-term negative consequences, has been associated with the development and maintenance of panic attacks (Reiss, Peterson, Gursky, & McNally, 1986).

According to the APA practice guidelines, CBT (i.e., challenging and replacing maladaptive thoughts related to panic and exposure to feared sensations) and pharmacotherapy are first-line treatments for PD and panic attacks (American Psychiatric Association, 2006). However, in a large survey of primary care physicians, Katerndahl and Ferrer (2004) found that more than 30% believed ineffective medications such as buspirone and low-potency benzodiazepines to be effective in treating PD, whereas less than 20% of physicians rated tricyclic antidepressants as effective. Rather surprising was the finding that 75% of physicians believed CBT to be effective in treating PD; however, only 35% reported using some form of this treatment with patients.

As the literature highlights, clear gaps in knowledge exist among primary care physicians regarding the symptoms of panic and the appropriate treatment of PD. However, the extent of knowledge specialists possess about this psychiatric disorder and its treatment is less clear, despite the fact that they are frequently referred patients with such concerns. The purpose of this study was to examine what cardiologists, gastroenterologists, and neurologists know regarding the clinical characteristics of PD and nonpharmacological treatments, such as CBT, and to

survey what role these specialists believe psychologists have in treating panic.

Method

Participants

Via telephone-directory and certification-agency listings, 1,267 physicians, including 607 cardiologists, 287 gastroenterologists, and 373 neurologists, in the greater Houston metropolitan area were identified and invited to participate in the current study by mailing them a questionnaire and letter briefly describing the purpose of the study. Those interested in participating were asked to complete the questionnaire anonymously and return it in a pre-addressed, stamped envelope. Reminder cards regarding the survey were mailed approximately 6 weeks later. Of the 1,267 surveys mailed, 86 surveys were returned unopened because the physician was no longer at the listed address. Thus, 1,181 surveys were available for completion. Of these, 10% ($n = 114$) of the sample returned completed surveys. Nineteen of the completed surveys indicated that the physician was from other than one of the three specialty areas being surveyed (e.g., surgeon), so these data were excluded from final analyses (see Table 1 for sample characteristics). Data were collected from November 2005 to February 2006. This study was approved by the Baylor College of Medicine Institutional Review Board and Veterans Affairs Research and Development Committee. As

Table 1 Characteristics of Physician Sample (%)

Characteristics	Specialty			
	Overall ($N = 95$)	Cardiologists ($n = 34$)	Gastroenterologists ($n = 30$)	Neurologists ($n = 31$)
Mean age (*SD*), years	44.35 (19.49)	47.24 (12.25)	52.77 (14.64)	39.94 (22.34)
Gender				
Female	15.8	11.8	13.3	16.1
Male	81.6	85.3	86.7	80.6
Unspecified	2.6	2.9	0.0	3.2
Race				
African American	6.3	11.8	0.0	6.9
Asian	12.6	11.8	20.0	6.9
Caucasian	69.4	58.8	73.3	79.3
Hispanic	8.1	8.8	6.7	6.9
Multiracial	0.9	2.9	0.0	0.0
Other	2.7	5.9	0.0	0.0
Patients treated				
Adolescents	17.0	18.8	17.2	16.1
35–55 years	30.2	6.3	37.9	51.6
≥55 years	52.8	75.0	44.8	32.3
Years in practice				
<5	14.9	20.6	10.0	12.9
5–10	18.4	20.6	10.0	16.1
11–20	25.4	20.6	16.7	38.7
>20	41.2	38.2	63.3	32.3
Referred ≥1 patient to a mental health professional	82.5	79.4	80.0	90.3
Number of persons with panic attacks treated				
0	8.1	15.2	10.7	0
1–5	17.1	15.2	14.3	6.5
5–10	14.4	9.1	25.0	12.9
10–20	15.3	3.0	14.3	25.8
20–50	21.6	18.2	25.0	29.0
>50	23.4	39.4	10.7	25.8

SD = standard deviation

this was an anonymous survey, completed questionnaires that were returned implied informed consent.

Materials

The survey used in this study followed the format of previous knowledge assessment surveys (Katerndahl & Ferrer, 2004; Marcks, Woods, Teng, & Twohig, 2004) and consisted of four sections. The first part of the survey asked general demographic questions, followed by a section assessing general knowledge about panic attacks, including their nature, course, and prevalence. The third section assessed physicians' understanding of the role of mental health professionals (e.g., psychologists) in treating panic attacks and associated symptoms and asked about the likelihood that they would refer patients to a mental health professional for such treatment. The fourth section assessed knowledge of various treatments for panic attacks, including components of cognitive-behavioral interventions. Questions from the second (10 items) and fourth (8 items) sections were combined to form a total knowledge score. Correct responses were assigned a value of 1, and incorrect responses were assigned a value of 0. The total knowledge score was derived by summing all items, with possible scores ranging between 0 and 18. Test reliability was calculated using the Kuder-Richardson coefficient, which indicated satisfactory internal consistency of knowledge items (.72).

Analyses

A one-way analysis of variance was used to evaluate differences in total knowledge scores among cardiologists, gastroenterologists and neurologists. A 3 (cardiologists, gastroenterologist, neurologist) × 2 (none, one or more patients with panic treated) analysis of variance (ANOVA) was conducted on the total knowledge score from the survey. Bonferroni-corrected multiple comparisons were used to examine differences between groups. To examine the relationship between physician referrals, demographic and practice-related variables, Pearson correlations were conducted.

Results

Demographic Data for Participants

See Table 1 for demographic characteristics of the physician sample.

Overall Knowledge

The one-way analysis of variance revealed no significant differences in the total knowledge score among cardiologists, gastroenterologists, and neurologists, $F(2, 94) = .91$, $p > .05$. Combined, these medical specialists answered 51% of all knowledge items correctly. Physicians correctly answered 48% of items pertaining to specific content areas, including the nature, course, and prevalence of panic attacks. Fifty-five percent of items assessing treatment knowledge were answered correctly (see Table 2 for descriptive data). Results of the ANOVA showed a significant main effect for specialty, $F(1, 87) = 3.25$, $p = .04$. There was no significant main effect for experience with treating persons with panic attacks, $F(1, 87) = 1.77$, $p > .05$. Although there was a significant interaction between specialty and number of persons with panic treated, $F(1, 87) = 4.75$, $p = .03$, Bonferroni-corrected multiple comparisons revealed no significant differences across groups. These findings indicate that, regardless of the degree of experience in treating patients with panic attacks, cardiologists ($M = 9.55$; $SD = 2.91$; 95% CI = 8.43–11.36), gastroenterologists ($M = 8.71$, $SD = 3.25$; 95% CI = 5.24–8.93), and neurologists ($M = 9.94$, $SD = 3.15$; 95% CI = 8.85–11.02) demonstrated the same degree of knowledge regarding PD. Average scores on knowledge items (out of a possible total score of 18) indicate that these physicians answered only half of the knowledge items correctly.

Table 2 Descriptive data of overall knowledge and content areas correctly answered by specialists

Knowledge area	Specialist type								
	Cardiologist ($n = 34$)			Gastroenterologist ($n = 30$)			Neurologist ($n = 31$)		
	M (*SD*)	%	95% CI	*M* (*SD*)	%	95% CI	*M* (*SD*)	%	95% CI
Overall (total score = 18)	9.44 (2.93)	52	8.42–10.46	8.87 (3.20)	49	7.67–10.06	9.94 (3.15)	55	8.78–11.09
Panic attack phenomenology (total score = 10)	4.85 (1.62)	49	4.29–5.42	4.67 (1.56)	47	4.08–5.25	5.19 (1.76)	52	4.55–5.84
Panic attack treatment (total score = 8)	4.59 (1.96)	57	3.91–5.27	4.20 (2.27)	53	3.35–5.05	4.74 (2.08)	59	3.98–5.50

M = mean

SD = standard deviation

Table 3 Specialists' knowledge about prevalence and course of panic attacks

	Percentage of physicians who responded correctly			
	Overall ($n = 114$)	Cardiologists ($n = 34$)	Gastroenterologists ($n = 30$)	Neurologists ($n = 31$)
General knowledge items				
PA is a sudden rush of fear with physical symptoms	99.1	97.1	100.0	100.0
People with PAs do not have a medical illness[a]	26.5	23.5	34.5	22.6
Agoraphobia refers to avoidance of situations	55.9	55.9	60.7	56.7
PAs disrupt general functioning	89.5	82.4	86.7	96.8
PAs increase risk of substance abuse and dependence	54.4	67.6	33.3	67.7
Prevalence of PAs is 3–8% in general population	36.0	50.0	26.7	29.0
PAs more common in women than men[a]	61.4	52.9	63.3	80.6
Cause of PAs is unknown	44.7	35.3	46.7	54.8
PAs are not caused by chemical imbalances in brain[a]	7.1	8.8	10.0	3.3
Prevalence rates of PAs in various ethnic groups are the same[a]	10.5	11.8	10.0	9.7
Treatment knowledge items				
There is a cure for PAs	30.4	33.3	33.3	32.3
Medication can relieve PA and anxiety symptoms.	97.4	94.1	96.7	100.0
There are effective psychological treatments	79.8	85.3	73.3	83.9
CBT is an effective treatment	61.4	70.6	56.7	64.5
CBT often results in being panic free	31.9	32.4	34.5	29.0
CBT is the psychological treatment of choice	32.5	32.4	30.0	38.7
Exposure is a key component in treating PAs	35.4	44.1	24.1	45.2
Cognitive restructuring is important in treating PAs	72.8	67.6	73.3	80.6

[a] Item has been reworded from the survey to reflect a true statement. All statements are worded as true

PA = panic attack

Knowledge of Prevalence and Course of Panic Attacks

Most of the combined group of specialists recognized the clinical features of a panic attack (99.1%) and knew that panic attacks significantly disrupt general functioning (89.5%). However, 92.9% of physicians reported believing that panic attacks are caused by chemical imbalances in the brain. Only 10.5% of respondents knew that panic attacks are equally prevalent across ethnic groups. See Table 3 for descriptive data for each item.

Knowledge of Treatment of Panic Attacks

Regarding treatment for panic attacks, nearly all (97.4%) of the combined group of physicians believed that medication can relieve panic and anxiety symptoms. On items about nonpharmacologic treatments for panic attacks, 79.8% of the sample reported knowing that effective psychological treatments are available for panic attacks, and 61.4% identified CBT as an effective treatment. However, only 32.5% recognized this form of therapy as a treatment of choice for this disorder, and only 31.9% agreed that CBT can help patients become panic-free by the end of treatment (see Fig. 1 for descriptive data).

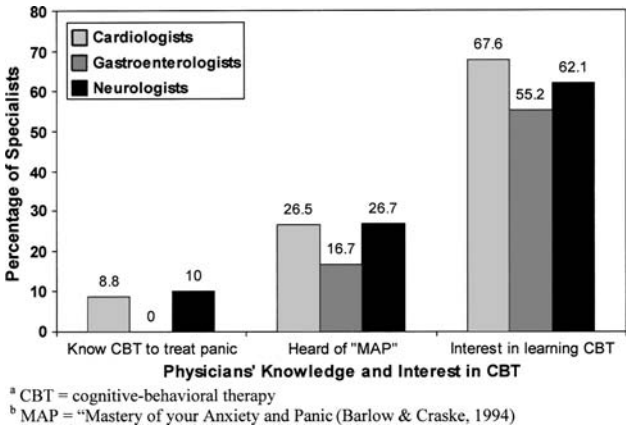

Fig. 1 Degree of knowledge and interest among specialists in learning cognitive behavioral therapy

Role of Mental Health Professionals

As shown in Fig. 2, although most physicians (79.8%) reported knowing that effective psychological treatments

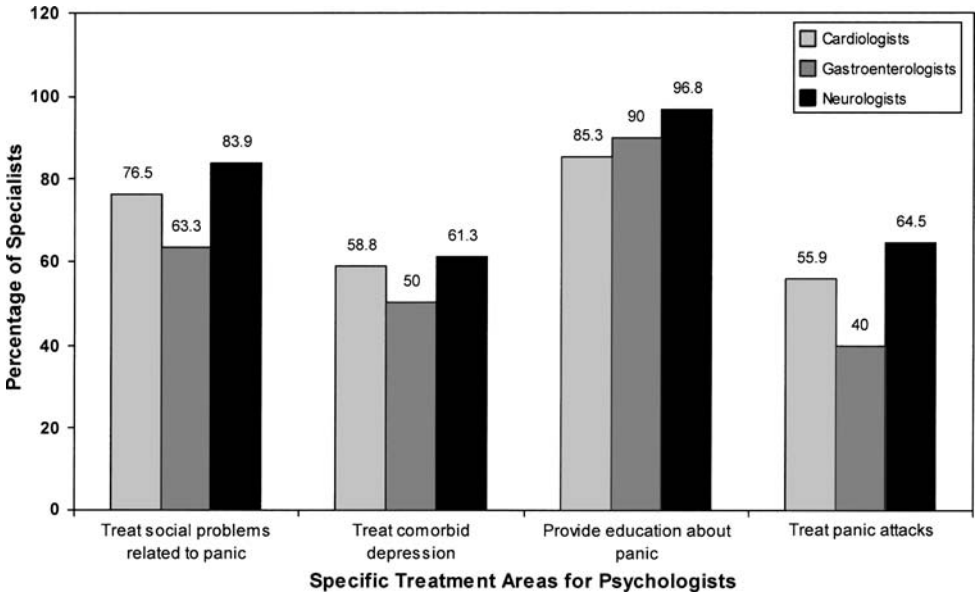

Fig. 2 Beliefs among specialists about the role of psychologists in treating persons with panic attacks

for panic exist, they primarily perceived the role of psychologists to be one of providing education about panic (91.2%) and treating social problems associated with panic (75.4%). Slightly more than half of physicians surveyed viewed psychologists as being able to treat panic attacks directly (56.1%) and comorbid conditions such as depression (57%).

Although Pearson correlations examining the relationship between physician referrals, demographic and practice-related variables were small, referrals to mental health professionals were directly related to physician age ($r = .22$, $p = .02$), overall knowledge of panic and treatment ($r = .20$, $p = .03$), years in practice ($r = .35$, $p < .001$), and number of patients treated with panic attacks ($r = .35$, $p < .001$).

Discussion

The purpose of this study was to examine specialists' knowledge regarding the nature and treatment of panic attacks and to evaluate perceptions about the role of mental health professionals, such as psychologists, in treating panic. General knowledge of panic attacks, their course, prevalence, and treatment was equivalent across cardiologists, gastroenterologists, and neurologists. However, the combined sample of physicians answered only 51% of the knowledge questions correctly in this survey. Overall results indicated that, although most physicians knew the definition of a panic attack, consistent and accurate knowledge of the phenomenology, associated sequelae and non-pharmacological treatments for panic was lacking. One implication of these findings is that, if physicians have a more accurate understanding of the multiple factors contributing to the development and maintenance of panic attacks (i.e., cognitive distortions regarding the meaning of panic symptoms), then they may be more willing to consider nonpharmacological treatments with demonstrated efficacy.

With regard to treatment, more than half of the overall sample reported knowing that psychological interventions are effective in treating panic; but only one third of the sample knew that CBT is the nonpharmacological treatment of choice for this problem. Although 73% of the sample agreed that cognitive restructuring is an important component in treating panic, only 35% agreed that exposure is also a key element of treatment. Perhaps unsurprisingly, only 6% of the physicians surveyed reported the ability to implement cognitive-behavioral techniques with a patient. However, it was encouraging to find that 60% of the combined sample indicated an interest in learning about CBT to treat panic attacks. Although it may not be practical for medical specialists to develop proficiency in CBT for panic, it may be worthwhile for them to learn basic strategies commonly used in CBT (e.g., education and breathing retraining) that could easily be used during a consultation or office visit.

Most physicians believed that a psychologist's role in treating panic is to provide education about panic and to address related social problems. Only about half of physicians believed psychologists could directly treat panic and comorbid conditions such as depression. This is disconcerting, given that psychologists are well qualified to implement CBT and that such nonpharmacological interventions typically outperform pharmacotherapy in decreasing panic attacks and maintaining gains over time (Klosko, Barlow, Tassinari, & Cerny, 1990; Otto & Deveney, 2005). Thus, another implication of these

findings is the importance of increasing awareness within the medical community of the role psychologists can have in treating panic attacks with the use of cognitive-behavioral approaches. This is important, because untreated and prolonged panic attacks can lead to increased risk of heart problems and mortality (Kawachi et al., 1994; Smoller et al., 2007).

In practice, physicians rarely have the time to treat patients for panic; and some may lack appropriate training. Furthermore, the option of referring patients to specialized treatment programs may not always be a viable option. To address these barriers, recent research focusing on the use of collaborative-care models to treat panic has been promising. Craske et al. (2002) found that a collaborative-care intervention combining psychotropic medication and brief CBT for PD in primary care settings was highly acceptable to physicians and patients. Also, a significant proportion of patients receiving this model of care had a remission in panic attacks and decrease in anticipatory anxiety compared with patients who received treatment as usual consisting of pharmacotherapy.

Despite the perceptions of the role psychologists may have in treating panic, most of the overall sample (82.5%) reported having made at least one referral to a mental health professional for panic symptoms. Unfortunately, more detailed information regarding the type of mental health referrals physicians made was not obtained in this study. Relative to the age of physicians and their general knowledge about panic attacks, the number of years physicians have practiced and their experience in treating patients with panic were more related to having made a referral to a mental health professional.

Although this study produced some interesting findings, it has several limitations. The first consideration reflects the problems inherent with mail surveys, which are low in cost but, unfortunately, also usually low in response rate. This study had a 10% response rate, which is comparable with that of other surveys conducted with healthcare professionals (Deehan, Templeton, Taylor, Drummond, & Strang, 1997). However, the low response rate may have affected the external validity of the study, since a non-response bias may limit the generalizability of the findings. Furthermore, these results are limited to the three medical specialties surveyed in this study. Additionally, the small sample size restricted the types of analyses that could be conducted and reduced the power to detect significant differences. Another limitation is that the survey items represent a preliminary assessment of practitioners' general knowledge about panic attacks. Although it would have been ideal to collect more detailed information, we deliberately tried to keep the survey as brief as possible to reduce subject burden. However, it would have been informative to have assessed some potential barriers that cardiologists, gastroenterologists, and neurologists face in detecting and treating panic attacks, e.g. factors identified in explaining the under-recognition of panic attacks in primary care settings. In particular, Roy-Byrne and Katon (2000) indicated that the stigma of mental illness, cultural influences on the clinical presentation of panic attacks, a bias to look for physical causes of somatic complaints, and an overburdened healthcare system all may contribute to the poor recognition of panic symptoms.

Despite the limitations, the current study represents one of the first attempts to survey the knowledge of specialists who are frequently referred patients with unrecognized panic symptoms. A key finding in this study is that specialists demonstrated significant gaps in knowledge regarding the nature, course, and treatment of panic attacks. That 92% of the specialists sampled indicated having treated individuals with panic attacks underscores the importance of improving recognition and knowledge about panic. These data clearly demonstrate that medical specialists need to be better informed about the efficacy of CBT approaches in treating panic symptoms. Additionally, efforts to increase the awareness of physicians regarding the potential role psychologists can have in medical settings is important, as many psychologists have the training and qualifications to treat persons with panic symptoms using CBT. This could be accomplished through providing an in-service to staff or through more formal channels such as a grand rounds presentation. Ultimately, this knowledge can help improve diagnostic accuracy while providing more streamlined physical and behavioral healthcare to patients with a very treatable disorder.

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