

**Prevalence and Illness Beliefs of Sleep Paralysis
among Chinese Psychiatric Patients in China and
the United States**

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Abstract To investigate the prevalence and illness beliefs of sleep paralysis (SP) among Chinese patients in a psychiatric out-patient clinic, consecutive Chinese/Chinese-American patients who attended psychiatric out-patient clinics in Boston and Shanghai were asked about their lifetime prevalence, personal experience and perceptions regarding the causes, precipitating factors, consequences, and help-seeking of SP. During the 4-month study period, 42 non-psychotic psychiatric out-patients from the Boston site and 150 patients from the Shanghai site were interviewed. The prevalence of SP was found to be 26.2% in Boston and 23.3% in Shanghai. Patients with post-traumatic stress disorder (PTSD) or panic disorder reported a higher prevalence of SP than did patients without these disorders. Patients attributed SP to fatigue, stress, and other psychosocial factors. Although the experience has traditionally been labeled 'ghost oppression' among the Chinese, only

two patients, one from each site, endorsed supernatural causes of their SP. Sleep paralysis is common among Chinese psychiatric out-patients. The endorsement of supernatural explanations for SP is rare among contemporary Chinese patients.

Key words Chinese • primary care • sleep paralysis

Sleep paralysis (SP) is an altered state of consciousness experienced immediately prior to falling asleep or upon waking. During these episodes, the individual is unable to move or speak and may experience vivid and sometimes frightening auditory or visual hallucinations. Recent surveys have indicated that SP is a relatively common experience across cultures, with approximately 18–40% of healthy people reporting at least one episode of SP (Cheyne, Newby-Clark, & Rueffer, 1999; Fukuda, Ogilvie, & Takeuchi, 2000; Kotorii et al., 2001; Wing, Chiu, Leung, & Ng, 1999).

The hypnagogic (upon falling asleep) and hypnopompic (upon awakening) hallucinations accompanying SP have produced unique cultural constructions of the nature and etiology of these nocturnal experiences (Cheyne et al., 1999). Consistent – reports of a terrifying, evil presence, pressure on the chest, suffocating or choking sensations, and vivid out-of-body experiences have been conceptualized variously as ‘Old Hag’ attacks in Newfoundland (Ness, 1978), *kanashibari* among the Japanese (Arikawa, Templer, Brown, Cannon, & Thomas-Dodson, 1999), ‘ghost oppression’ among the Chinese (Wing, Lee, & Chen 1994), and more recently, the memory and experience of being abducted by aliens (Perina, 2003; McNally & Clancy, 2005). Similarities in the patterning of symptoms and rapid eye movement (REM) activity observed across indigenous forms of SP suggest that these various disorders may share the same physiological basis (Wing et al., 1999). However, the sociocultural and cognitive frameworks that mediate these physiological experiences give rise to different constructions of the salience and meaning of these experiences across cultural groups (Fukuda et al., 2000). In 1994, Wing and colleagues studied ‘ghost oppression’ among Chinese in Hong Kong and reported that even among college students, 16% of them associated this phenomenon with supernatural beliefs.

Studies have suggested that SP is more prevalent among individuals with post-traumatic stress disorder (PTSD; Ohayon & Shapiro 2000) and panic disorder (Bell, Dixie-Bell, & Thompson, 1986), although there is some data to suggest that this association may vary across ethnic groups. For example, reported rates for SP in African Americans with panic disorder range from 42.0 to 59.6%, whereas the rates of SP in whites with panic disorder range from 7.5 to 25% (Paradis & Friedman, 2005; Paradis,

Friedman, & Hatch, 1997; Smith, Friedman, & Nevid, 1999). These ethnic differences in the rates of SP among individuals with PTSD or panic disorder have been attributed to higher levels of racism, stress, and traumatic experiences in the African-American community, which may, in turn, increase the risk of sleep disturbances (Friedman & Paradis, 2002).

The present study is a cross-cultural pilot investigation to address two questions:

1. What is the prevalence of SP among Chinese in the US and China?
2. Do Chinese patients in the US and in China endorse supernatural causes of SP?

We hypothesize that the prevalence of SP among Chinese in the US and China will be comparable, whereas Chinese patients in China will be more likely to endorse supernatural causes of SP compared to Chinese patients in the US.

METHODS

SITE AND SAMPLE

The subjects recruited for this cross-cultural study were patients presenting consecutively at two research sites: (i) Chinese-American patients from the out-patient mental health service of South Cove Community Health Center (South Cove) in Boston's Chinatown, and Chinese patients from the Shanghai Counseling Center of the Shanghai Institute of Mental Health in Shanghai, China. South Cove is an urban community health center serving low-income Asian immigrants who face financial, linguistic, and cultural barriers to health care. In 2002, the medical facility provided 72,180 medical visits and served 12,107 patients. Clinical services provided include primary care, obstetrics/gynecology, pediatrics, dentistry, ophthalmology, and mental health. The population served is predominantly Asian (96%); other ethnic groups served include African Americans (1%) and whites (2%). In our present study, the ethnicity of the patients was determined by self-report.

The Shanghai Counseling Center, affiliated with the Shanghai Mental Health Center, is the largest out-patient clinic in Shanghai. It offers a variety of mental health services, including counseling, psychotherapy and substance abuse treatment. In 2002, the center reported 42,301 out-patient visits, which included 2475 psychotherapy sessions. At both sites, patients with a history of or current psychotic symptoms were excluded from the study because these patients may not be able to discriminate delusions about ghost influence from their SP experience.

PROCEDURES

Consecutive patients who attended the out-patient psychiatric clinics at the two sites during the study period (May 1 to August 31, 2003) were informed of the nature of this study and invited to participate. Consenting patients were interviewed by psychiatrists (AY in Boston and YX in Shanghai) during their clinical visits. The Sleep Paralysis Questionnaire (Appendix, unpublished questionnaire) designed by Devon Hinton was orally administered to subjects at both sites in Mandarin, Cantonese, or the Shanghai dialect, depending on the patient's preference. None of the subjects in this study was interviewed in English.

DATA ANALYSES

The demographic characteristics of subjects from the two sites were compared using the Student's *t*-test and the Chi-squared test. Chi-squared tests were used to compare the prevalence of SP across the two sites, between patients with and without PTSD, and between patients with and without panic disorder. All statistical tests performed were two-tailed, and the significance level was set at $p < .05$.

RESULTS

DEMOGRAPHIC DESCRIPTION

At the Boston site, 50 non-psychotic psychiatric out-patients were approached during the study period, and 44 (88.0%) consented to participate in the study. The mean age of the subjects from Boston was 55 ± 14 years, and the gender ratio (female to male) was 2.7:1. Subjects in Boston had an average of 9.3 years of education ($SD = 4.8$; range 0–16) with over 50% having a high school degree or higher. The average number of years in the US was 15.3 ($SD = 9.5$, range 1–40); however, their level of acculturation was uniformly low, based on the fact that none were fluent in English. At the Shanghai site, 180 non-psychotic psychiatric out-patients were approached and 150 (83.3%) consented to participate in the study. Mean age of the subjects from Shanghai was 37 ± 13 years, and the gender ratio (female to male) was 1.4:1. Data regarding subjects' educational level were unavailable at the Shanghai site. Group comparisons revealed that the Chinese-American subjects were significantly older ($p < .001$); however, there was no significant difference in gender distribution across the two sites. The psychiatric diagnoses of subjects at each site are presented in Table 1.

TABLE 1
Psychiatric diagnoses of non-psychotic out-patients at both sites

<i>Psychiatric diagnoses</i>	<i>Boston (n = 44)</i>		<i>Shanghai (n = 150)</i>	
	<i>N</i>	<i>(%)</i>	<i>N</i>	<i>(%)</i>
Adjustment Disorder	3	(6.8)	0	(0.0)
Anorexia	0	(0.0)	1	(0.6)
Bipolar Disorder	5	(11.4)	5	(3.0)
Generalized Anxiety Disorder	0	(0.0)	23	(15.0)
Major Depressive Disorder	35	(80.0)	72	(48.0)
Obsessive Compulsive Disorder	0	(0.0)	24	(16.0)
Panic Disorder	1	(2.3)	18	(12.0)
Post-Traumatic Stress Disorder	6	(13.6)	3	(2.0)
Social Anxiety	0	(0.0)	8	(5.3)
Somatoform Disorder	1	(2.3)	1	(0.6)

PREVALENCE

The prevalence of SP was found to be similar at the Boston and Shanghai sites (26.2 vs. 23.3%, *n.s.*). Patients with PTSD, compared to patients without PTSD, had a higher prevalence of SP both in Boston (66.7 vs. 19.4%, $\chi^2 = 5.2$, $p < .05$) and in Shanghai (100.0 vs. 21.8%, $\chi^2 = 10.0$, $p < .005$). In Shanghai, patients with panic disorder, compared to patients without panic disorder, had a higher prevalence of SP (55.6 vs. 18.9%, $\chi^2 = 11.6$, $p < .005$). These analyses were not replicated for the Boston site because only one patient was diagnosed with panic disorder at that site.

ATTITUDES TOWARDS THE SLEEP PARALYSIS EXPERIENCE

Contrary to expectation, the attitudes and beliefs towards the sleep paralysis experience of Chinese in the US and China were almost identical. Therefore, we have combined subjects from the two sites in reporting the results. Among subjects reporting at least one episode of SP, most patients (92.0%) considered SP a benign condition although it could be fear provoking when first experienced. During the initial episodes of SP, many patients reported worries that they were suffering from heart disease, stroke, or other medical problems. Such worries generally subsided after patients learned that SP is self-limiting and does not have harmful consequences. Nearly all subjects (except two from the Boston site and five from the Shanghai site) denied having active SP during the period of the study, and none of the subjects identified SP as their presenting complaint. To most subjects in this study, SP was a past, benign experience. Such a view may explain why patients in both sites tended to minimize their SP

symptoms, expressed little interest in discussing their SP experiences, and provided few details about the attacks.

ILLNESS BELIEFS

When patients were asked about the name of the experience, 60% reported 'I don't know.' Patients' interpretations of their experiences were then elicited. After that, they were asked if they had heard of the term 'ghost oppression.' More than half (54%) of the participants acknowledged that they had heard of the label 'ghost oppression,' and agreed that this was the term people would use to describe similar experiences. Accepting the label, however, did not imply that they had adopted supernatural interpretations of the experience. The most common causes of SP cited by the subjects included stress (66%), fatigue (56%), psychosocial problems (40%), and poor blood circulation (15%). These findings are similar to Wing et al.'s (1994) study on ghost oppression among Chinese college students in Hong Kong, in which 68.3% of subjects identified psychological factors and fatigue as precipitating factors. In contrast to Wing et al.'s findings, few subjects in our study attributed their SP experience to ghost possession or other supernatural phenomenon. Only one patient at the Boston site considered herself as being haunted by spirits during episodes of SP, but she declined to discuss it further. Another patient at the Shanghai site disclosed that her parents thought that she was possessed by 'Hu Li Jing' (the legendary fox spirit who is filled with strong seductive power), but the patient herself was unsure about how to explain her SP experiences.

In general, subjects reported low levels of stigma or discomfort in discussing their SP experiences. Rather, subjects' lack of interest and concern about the issue was apparent in both sites. As predicted, very few patients had sought help for SP in the past (four [9.5%] from Boston, and twelve [8.0%] from Shanghai). SP was generally considered a harmless phenomenon with spontaneous remission.

DISCUSSION

There are several notable findings about this study. First, results indicate that the lifetime prevalence of SP is fairly high among Chinese psychiatric out-patients. Similarly, Wing and colleagues (1994) reported that up to 37% of the 603 college undergraduates in Hong Kong had experienced at least one attack of ghost oppression. However, comparisons across studies are complicated by differences in the demographic characteristics of the populations studied and the methods used in assessing SP. The prevalence of SP has shown tremendous variation across studies, and prevalence as

low as 4.7% (Goode, 1962) and as high as 62% (Ness, 1978) has been reported.

Second, patients with PTSD or panic disorder were found to have a higher prevalence of SP compared to those with other psychiatric diagnoses. These results suggest that the higher physiological arousal and attention to bodily sensations among these groups may increase risk for sleep disturbances such as SP. However, due to the small number of subjects with PTSD and panic disorder in this study, these results should be interpreted with caution and replicated with larger patient samples.

Third, it is striking that the Chinese and Chinese American subjects in this study expressed significant skepticism towards supernatural explanations of an unusual and difficult-to-explain bodily experience. Patients in this study frequently dismissed and even expressed ridicule in response to the clinician's questions about spirit or ghost oppression as a potential cause of their SP. This finding was somewhat unexpected given that the subjects came from diverse generational and educational backgrounds. This observation is particularly intriguing in light of previous findings that 16% of Hong Kong Chinese college students associated SP with supernatural causes (Wing et al., 1994). This waning belief in supernatural forces may be viewed as the result of globalization and increasing westernization in modern Chinese societies, as science and the secular begin to be seen as important markers of modernity (Tamney & Chiang, 2002). With the rapid pace of China's modernization over the past two decades, Chinese are increasingly moving away from superstitious beliefs and many now view traditional folk theories of illness as backward and unsophisticated. Declining belief in the supernatural appears to have influenced both the younger generation (subjects in Shanghai) as well as the older generation (subjects in Boston). Although our subjects in Shanghai and in Boston continue to maintain many aspects of Chinese tradition, the break from a supernatural world-view may represent 'cultural fragmentation,' the piecemeal adoption of other cultures in the process of modernization (Tamney & Chiang, 2002).

Supernatural beliefs, while lacking a scientific basis, offer explanations for some poorly understood phenomenon. Chinese patients who have relinquished traditional folk theories of illness, but are unfamiliar with western psychiatric concepts, may feel more uncertain and lost as a result of this knowledge gap. It will be interesting to follow this trend, to find out if Chinese/Chinese Americans move increasingly towards western-style illness beliefs, or whether, as in the case of the newly emergent 'alien abduction' construction of SP in the US (McNally & Clancy, 2005), a new indigenous belief system will come into being.

There are several limitations of this study. First, the sample sizes were relatively small at both sites, which limited the statistical power of the

analyses. In addition, certain diagnoses, like generalized anxiety disorder, obsessive compulsive disorder, social phobia, and anorexia were not found at the Shanghai site. Second, because the interviews were conducted face-to-face, it is possible that some patients denied their beliefs about ghost oppression, thinking that it is 'old fashioned' and embarrassing to admit. Third, given the significant heterogeneity of Chinese populations both locally and abroad, care should be taken to avoid over-generalizing these results. As subjects in this study represent patients from metropolitan areas (Boston and Shanghai), their experiences and beliefs may not be shared by Chinese who reside in less urbanized areas. Moreover, the Boston subjects were recent immigrants with a low degree of acculturation, and therefore represent only a segment of overseas Chinese individuals. Finally, because the study focuses on psychiatric out-patients, the results may not be generalizable to Chinese community samples.

REFERENCES

- Arikawa, H., Templer, D. I., Brown, R., Cannon, W. G., & Thomas-Dodson, S. (1999). The structure and correlates of *kanashibari*. *Journal of Psychology*, 133, 369–375.
- Bell, C. C., Dixie-Bell, D. D., & Thompson, B. (1986). Further studies on the prevalence of sleep paralysis in black subjects. *Journal of the National Medical Association*, 78, 649–659.
- Cheyne, J. A., Newby-Clark, I. R., & Rueffer, S. D. (1999). Relations among hypnagogic and hypnopompic experiences associated with sleep paralysis. *Journal of Sleep Research*, 8, 313–317.
- Friedman, S., & Paradis, C. (2002). Panic disorder in African-Americans: Symptomatology and sleep paralysis [commentary]. *Culture, Medicine & Psychiatry*, 26, 179–198.
- Fukuda, K., Ogilvie, R. D., & Takeuchi, T. (2000). Recognition of sleep paralysis among normal adults in Canada and in Japan. *Psychiatry & Clinical Neurosciences*, 54, 292–293.
- Goode, G. B. (1962). Sleep paralysis. *Archives of Neurology*, 6, 228–234.
- Kotorii, T., Kotorii, T., Uchimura, N., Hashizume, Y., Shirakawa, S., Satomura, T., Tanaka, J., Nakazawa, Y., & Maeda, H. (2001). Questionnaire relating to sleep paralysis. *Psychiatry & Clinical Neurosciences*, 55, 265–266.
- McNally, R. J., & Clancy, S. A. (2005). Sleep paralysis, sexual abuse and space alien abduction. *Transcultural Psychiatry*, 42(1), 113–122.
- Ness, R. C. (1978). Old hag phenomenon as sleep paralysis: A biocultural interpretation. *Culture, Medicine, and Psychiatry*, 2, 15–39.
- Ohayon, M., & Shapiro, C.M. (2000). Sleep disturbance and psychiatric disorders associated with posttraumatic stress disorder in the general population. *Comprehensive Psychiatry*, 41, 469–478.
- Paradis, C. M., & Friedman, S. (2005). Sleep paralysis in African Americans with panic disorder. *Transcultural Psychiatry*, 42(1), 123–134.

- Paradis, C. M., Friedman, S., & Hatch, M. (1997). Sleep paralysis in African Americans with panic disorder. *Cultural Diversity & Mental Health*, 3(1), 69–76.
- Perina, K. (2003). Cracking the Harvard x-files. *Psychology Today*, March/April, 67–77.
- Smith, L. C., Friedman, S., & Nevid, J. (1999). Clinical and sociocultural differences in African American and European American patients with panic disorder and agoraphobia. *Journal of Nervous & Mental Disease*, 187, 549–560.
- Tamney, J. B., & Chiang, L. H. L. (2002). *Modernization, globalization, and Confucianism in Chinese societies*. Westport, CT: Praeger.
- Wing, Y. K., Chiu, H., Leung, T., & Ng, J. (1999). Sleep paralysis in the elderly. *Journal of Sleep Research*, 8, 151–155.
- Wing, Y. K., Lee, T., & Chen, C. N. (1994). Sleep paralysis in Chinese: Ghost oppression phenomenon in Hong Kong. *American Sleep Disorders Association and Sleep Society*, 17, 609–613.

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APPENDIX

SLEEP PARALYSIS QUESTIONNAIRE

Age: _____ Gender : male female
Panic disorder: yes no
PTSD: yes no

1. Upon going to sleep or awakening, have you ever had the experience of wishing to move or speak but being unable to do so? yes no
2. How many times during your lifetime? _____
3. How many times in the last year? _____
4. How many times in the last month? _____
5. About how long are you usually unable to move or speak? _____
6. Do you usually have the experience when falling asleep or upon awakening? _____
7. Were you afraid of the experience?
not at all a little some a fair amount or a lot
8. Did you fear dying?
not at all a little some a fair amount or a lot
9. Did you worry that there was something seriously wrong with your body?
not at all a little some a fair amount or a lot
What were you afraid was wrong with your body? _____

10. When you had that experience of being awake but unable to move or speak, did you see something like a shadow or some shape that moved toward you? yes no
What shape did you see? _____
What were afraid the shape might do to you? _____
Is there a name for the being that you saw? _____
11. What do you think caused the sleep paralysis? _____
12. Did you do something to try and prevent further episodes of sleep paralysis? _____

13. Did you consult a traditional healer about your sleep paralysis? yes no

If so, what kind of healer? _____

If so, what did they say was the cause? _____

If so, what kind of treatment did they suggest? _____