A systematic study of acupuncture practice: acupoint usage in an outpatient setting in Beijing, China[☆]

Vitaly Napadow[a,b,*], Jing Liu[a], Ted J. Kaptchuk[c]

[a] Athinoula A. Martinos Imaging Center, Massachusetts General Hospital, Boston, MA, USA
[b] Department of Radiology, Logan College of Chiropractic, Chesterfield, MO, USA
[c] Osher Institute, Harvard Medical School, Boston, MA, USA

KEYWORDS

Acupuncture treatment;
Alternative and integrative medicine;
Acupoint;
Chinese medicine

Summary Acupuncture textbooks mention a wide assortment of indications for each acupuncture point and, conversely, each disease or indication can be treated by a wide assortment of acupoints. However, little systematic information exists on how acupuncture is actually used in practice: i.e. which points are actually selected and for which conditions. This study prospectively gathered data on acupuncture point usage in two primarily acupuncture hospital clinics in Beijing, China. Of the more than 150 unique acupoints, the 30 most commonly used points represented 68% of the total number of acupoints needled at the first clinic, and 63% of points needled at the second clinic. While acupuncturists use a similar set of most prevalent points, such as LI-4 (used in >65% of treatments at both clinic sites), this core of points only partially overlaps. These results support the hypothesis that while the most commonly used points are similar from one acupuncturist to another, each practitioner tends to have certain acupoints, which are favorites as core points or to round out the point prescription. In addition, the results of this study are consistent with the recent development of "manualized" protocols in randomized controlled trials of acupuncture where a fixed set of acupoints are augmented depending on individualized signs and symptoms (TCM patterns).
© 2004 Elsevier Ltd. All rights reserved.

Introduction

Acupuncture is a multifaceted healing modality that originated in China and has been gradually gaining both popularity and credibility in Western countries.[1] One of acupuncture's characteristics is a plurality in diagnosis and treatment, which has withstood many attempts to create a singular and uniform system.[2–4] Many schools of treatment exist and the rationale behind an acupuncturist's decision to choose certain acupoints does not have universal consensus. While this lack of standardization is potentially confounding in research trials, the multiplicity inherent in acupuncture is a reality

of the practice. Many different acupoints may be used to treat one disease (or one TCM diagnostic pattern), while the same acupoint may be used to treat many different diseases.

In this study, we attempt to provide quantitative data on acupoint usage in China, acupuncture's country of origin. The results of the prevalence patterns gleaned from this dataset have been published in another publication.[5] The results of this earlier study demonstrated that the acupoint usage patterns presented in this study are derived mostly from the treatments of musculoskeletal and neurological conditions.

Methods

Data were collected from two outpatient clinics set in two hospitals in Beijing, China. The first clinic was at the Wan Jing Hospital of the Chinese Academy of TCM, located northeast of Beijing city center. It was founded as the Beijing Hospital of Acupuncture and Orthopedics and was originally a trauma and orthopedics center, but was later expanded to other departments in order to meet the local community's needs. The outpatient service had 20 beds spread over three rooms and 2 full-time staff doctors (Dr. Yu-Qing Xia and Dr. Na Hong). Dr. Xia was responsible for treating the majority of patients in this clinic. She was originally trained as a western physician, but later trained as a traditional Chinese medicine doctor, and has now been practicing TCM for over 50 years.

The second clinic was at the Beijing Hospital of TCM, more centrally located inside Beijing. The outpatient service had 12 full-time staff doctors, one of which was Dr. Wei Zhu. He controlled six to nine beds (one to two rooms, depending on availability). Dr. Zhu trained as a ''barefoot doctor'' in addition to subsequent more formal education in Beijing.

Data collection was completed over a period of 18 clinic days at the Beijing Hospital of TCM, and over 5 days at Wan Jing hospital. A total of 563 treatments were recorded from Beijing Hospital of TCM, while a total of 233 treatments were recorded at Wan Jing Hospital. For each treatment observed, a record was made of the patient's gender, ''main complaint,'' and which acupoints were used for the treatment. The ''main complaint'' was tracked by treatment and not by patient, as patients would sometimes alter their main complaint over the course of treatment. Acupoints were recorded according to the standard set of 361 main channel points, and 40 ''extra points''.[6] Ear acupoints were

not included in the analysis (and were rarely used), while scalp acupuncture points included only major, commonly accepted points (e.g., sensory, motor, speech). ''Ah-shi'' points, otherwise known as tender points, were also not included in this analysis, as their location varies according to palpation response and symptom. Acupoint laterality was not considered, though for the most part, practitioners needled the points bilaterally.

The purpose of this study was to explore which acupoints were most commonly utilized for treatment. Specifically, point usage was assembled and presented as a histogram for every main complaint characterized in the analysis. ''Usage'' was presented as percentage of treatments containing a certain acupoint per total number of treatments logged at the individual hospital site.

CVA recovery was chosen as a representative main complaint to present in the results as there was a large sample size (67 treatments at BJHTCM, and 28 at WJH), thus allowing for stronger conclusions to be made. For purposes of clarity, the acupoints presented in the histogram for BJHTCM were those used greater than once, which resulted in the number of unique acupoints to be contracted from 63 to 45.

The following metrics were also tabulated: total number of acupoints needled, number of unique acupoints, number of acupoints needled for each disease, average number of acupoints needled per treatment. Furthermore, the 30 most common acupoints needled at both clinics were tabulated and compared.

Results

The following figures and tables represent the results of data acquisition in the outpatient departments of Beijing Hospital of TCM (BJHTCM) and Wan Jing Hospital (WJH). General statistical compilation (Table 1) included data for the total number of treatments (563 and 233, respectively), the average number of treatments per day (31.3 and 46.6, respectively), average number of acupoints needled per treatment (12.2 and 14.7, respectively) and the total number of unique acupoints used (160 and 156, respectively).

The acupoint data were compiled to produce a histogram of the 30 most commonly used acupoints at both clinics (Figs. 1 and 2). These 30 points represented 68% of the total number of acupoints needled at the Beijing Hospital of TCM, and 63% of points needled at Wan Jing Hospital. The data demonstrated that LI-4 was the most commonly

	Beijing Hospital of TCM	Wan Jing Hospital
Days of observation	18	5
Total number of treatments	563	233
Average number of Tx per day	31.3	46.6
Total number of acupoints	6608	3426
Average number of acupoint/Tx	12.2	14.7
Total number of unique points	160	156

monly treated acupoints were TE-5 (63.5%) and SP-6 (60.1%).

Moreover, for the 64 different main complaints logged in this study, the data at BJHTCM demonstrated that LI-4 was used at least once for 75% of all complaints, while ST-36 and SP-6 were used at least once for 71% of complaints, and LV-3 for 67% of complaints. At WJH, TE-5 was used at least once in the treatment of 79% of main complaints, while SP-6 was used at least once for 74% of complaints, and LI-4 and ST-36 were used in 71% of complaints.

A more detailed analysis demonstrated that the list of 30 most common points for each clinic represented a total of 43 unique acupoints. Thus, more than half of the points in each list (17 acupoints, or 57%) were shared between the two clinics. These 17 points represented 67% (BJHTCM) and 66% (WJH) of the total usage attributed to these 30 points. Hence, these common points represented a disproportionately large number of the usage of the ''top-30'' points, and included such well-known acupoints as LI-4, ST-36, SP-6, BL-23, KD-3, TE-5, LV-3, GV-20, and Taiyang.

needled acupoint at both clinic sites (used in 67.7% of treatments at BJHTCM and 66.1% at WJH). The second and third most commonly treated acupoints at BJHTCM were ST-36 (56.0) and LV-3 (50.6), respectively. At WJH, the second and third most com-
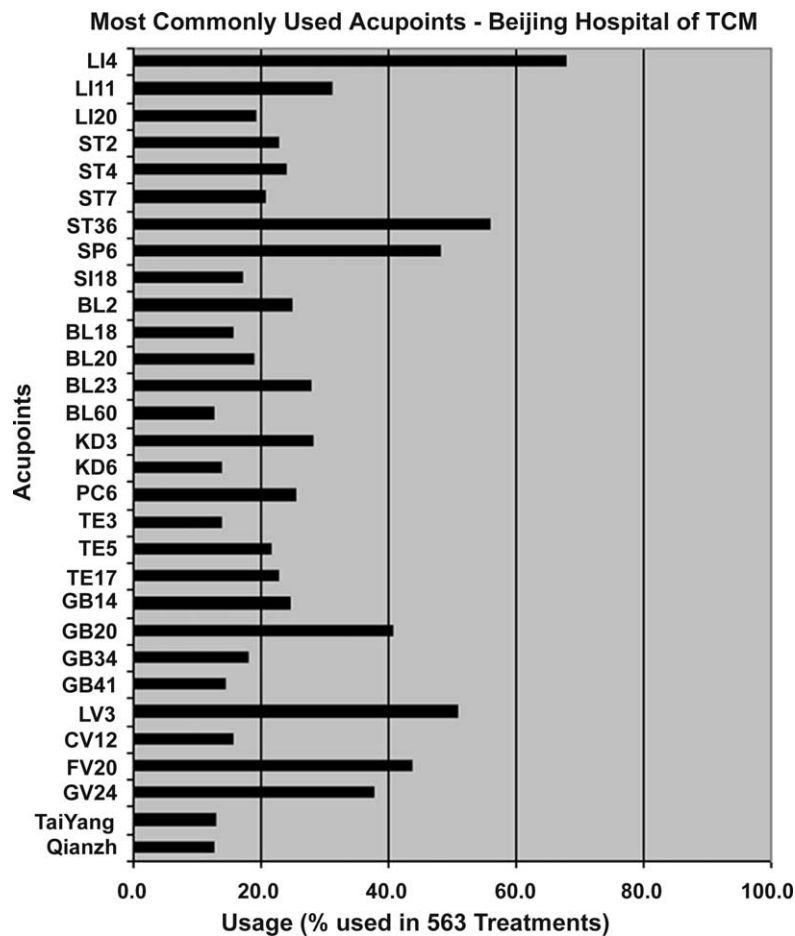

Figure 1. Usage chart of the 30 most commonly used acupoints for treatments logged at the Beijing Hospital of TCM. Usage is presented as a percentage of treatments the acupoint was used in the total of 563 treatments logged.
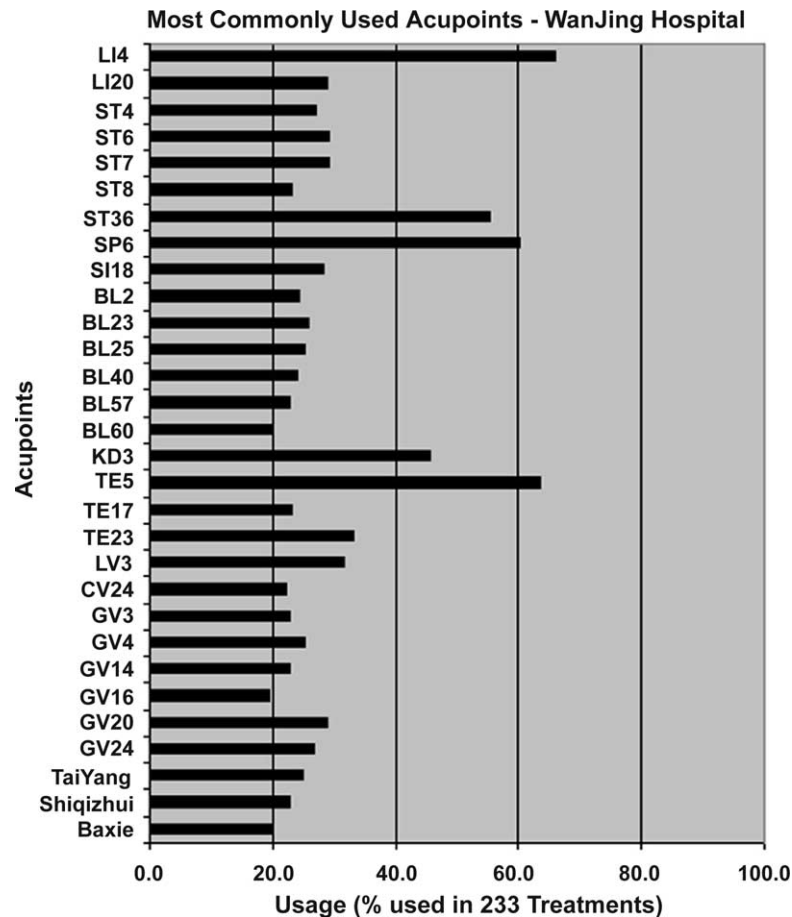
Figure 2. Usage chart of the 30 most commonly used acupoints for treatments logged Wan Jing Hospital. Usage is presented as a percentage of treatments the acupoint was used in the total of 233 treatments logged.

Furthermore, both clinics demonstrated similar points as their most frequent acupoints. Specifically, these included LI-4 (67.7% of treatments at BJHTCM and 66.1% of treatments at WJH), ST-36 (56.0% at BJHTCM and 55.4% at WJH), and SP-6 (48.1% at BJHTCM and 60.1% at WJH). However, some differences did exist. For example, LV-3 was very commonly used at BJHTCM (50.6%), and only moderately used at WJH (31.8%). On the other hand, TE-5 was the second most commonly used acupoint at WJH (63.5%), and only moderately used at BJHTCM (21.5%).

Acupoint histograms were also compiled for individual main complaints. CVA, or stroke, recovery was chosen as a representative complaint (Figs. 3 and 4) as the number of treatments logged at both clinic sites (67 or 3.7 Tx/day at BJHTCM, 28 or 5.6 Tx/day at WJH) allowed for stronger comparisons and conclusions to be made. Of the 63 unique acupoints used for CVA recovery at the BJHTCM, and the 56 unique acupoints at WJH, 32 were common to both lists. Furthermore, these 32 points

represented 77% (BJHTCM) and 74% (WJH) of the total acupoints needled for CVA recovery at both sites, and included such common acupoints as LI-4, ST-36, SP-6, 9, HT-7, KD-3, TE-5, GB-20, 30, 34, LV-3, GV-15, 20, 24, and scalp motor and speech points.

Discussion

A dearth of research exists describing acupuncture point usage for a large cohort of patients. Our data suggest that acupoint selection at two hospital clinics in Beijing, China embodied a core of very frequently used points across many different conditions, augmented by a set of idiosyncratic points that seem unique to the practitioner. Textbooks of TCM usually note that while some acupoints are indicated in a wide assortment of conditions, others have a more narrow usage. Our study provides descriptive confirmation that this
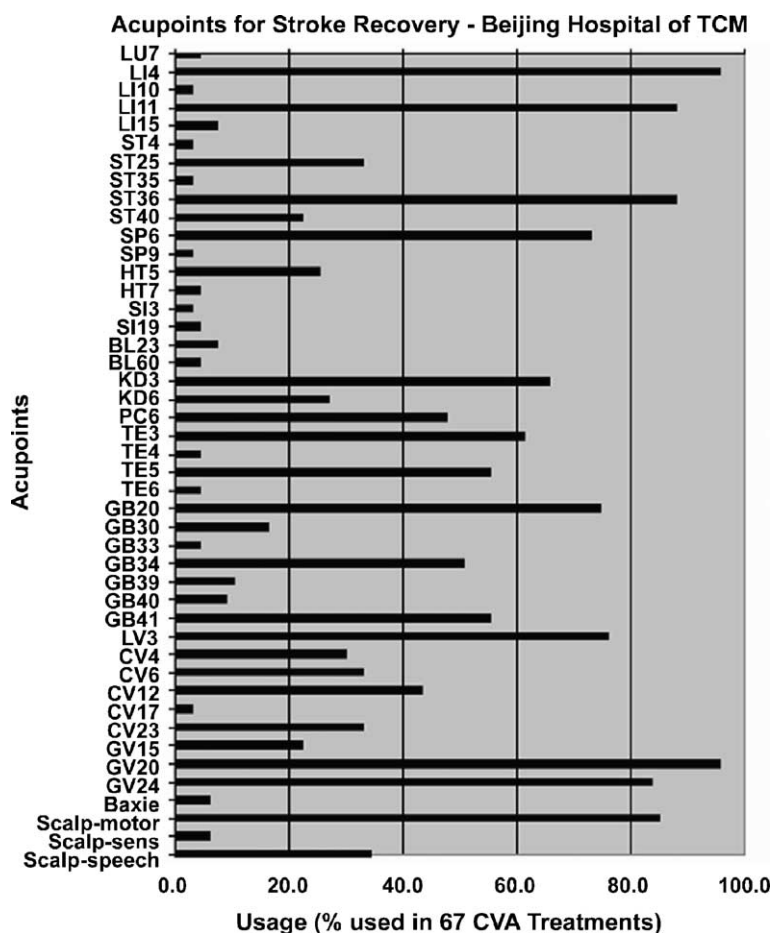
Figure 3. Usage chart of the acupoints used for CVA, or stroke, recovery at the Beijing Hospital of TCM. Usage is presented as a percentage of treatments the acupoint was used in the total of 67 treatments logged.

phenomenon exists—in fact, some points seem to be critical and even indispensable. The data suggest that acupuncturists select preferentially from among acupoints that have many indications, and round out the treatment with less common acupoints that are particular to the TCM pattern, disease or main complaint.

Tabulation of the data demonstrated that a relatively large number of unique points were used at both clinics (160 at BJHTCM, and 156 at WJH, out of a total of 361 main meridian points and 40 extra points.[6] A wide range existed, where some points, such as LI-4, were used in greater than 65% of treatments, while other acupoints, such as LI-2, were used in less than 1% of treatments (at both clinics). For each acupuncturist, acupoint choice most likely comes from a combination of sources including formal education, mentorship, empirical derivation, and a need to balance wide coverage with excessive needling. Unfortunately, we are unaware of any published prospective or even retrospective studies featuring this type of data to which we may

compare our results. However, a similar investigation, limited to low back pain, is discussed in the following.

The most commonly used acupoints at both clinics were summarized by a listing of the 30 most frequently used points (Figs. 1 and 2). In total usage, these 30 points represented a large proportion of all needled points (68% at BJHTCM, and 63% at WJH). However, these statistics could also be interpreted to say that greater than 30% of all points needled came from a pool of well over 100 different acupoints. Thus, while some acupoints can be characterized as being most common or major points, each acupuncturist uses a diversity of other, less common points to ''round-out'' a chosen point-prescription. Many times, the points that are used to round-out the point-prescription were specifically geared to the symptoms and signs demonstrated by individual patients. This approach is known as the root-branch method of point selection. For instance, a patient recovering from CVA may or may not have had speech pathology
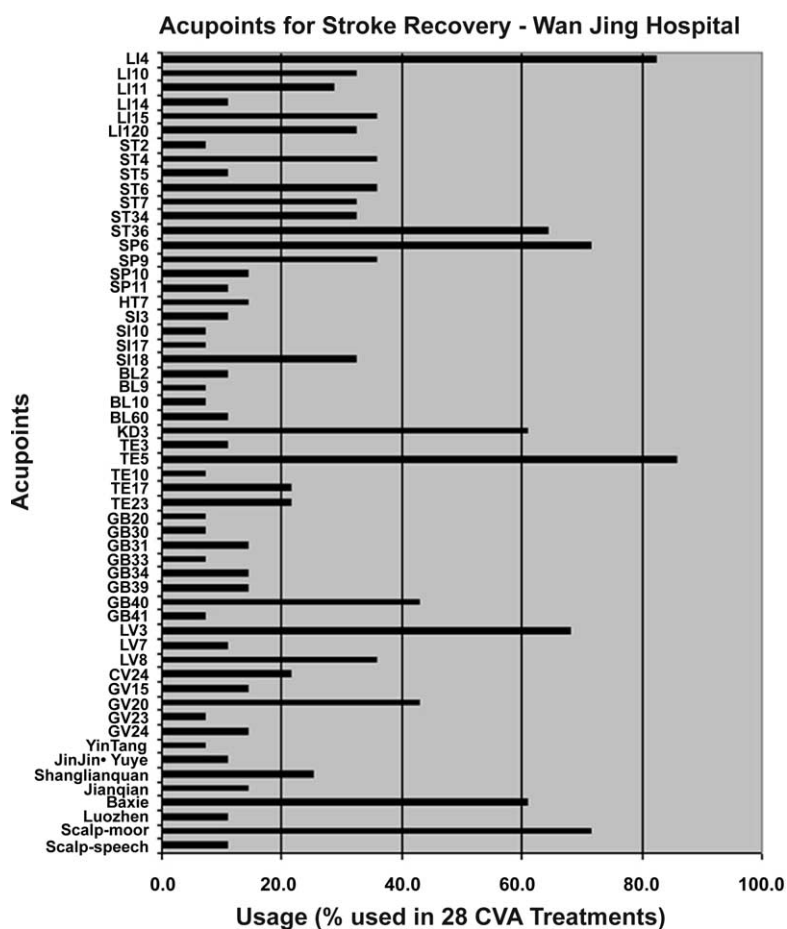
Figure 4. Usage chart of the acupoints used for CVA, or stroke, recovery at Wan Jing Hospital. Usage is presented as a percentage of treatments the acupoint was used in the total of 28 treatments logged.

complications. If this complication was present, the acupuncturist was likely to have chosen acupoints specific for aphasia or dysphasia. At WJH, speech complications were most commonly treated with CV-23 (7.1% of all CVA treatments), CV-24 (21.4%), and the scalp-speech acupoint (13.6%). At BJHTCM, CV-23 (32.8%) and the scalp-speech point (34.3%) were also used, but instead of CV-24, the acupuncturist chose to use HT-5 (25.4%), which is noted to treat aphasia with stiffness of the tongue.[6] Hence, these data support the possibility that different acupuncturists choose different points to treat the secondary symptoms common in outpatient acupuncture.

It was interesting to note that of the 30 most common acupoints from both clinics, certain points were very common at both sites. These included LI-4, which was the most common point needled at both clinics (67.7% of treatments at BJHTCM and 66.1% of treatments at WJH). Other very common points included ST-36 (56.0% at BJHTCM and 55.4% at WJH), and SP-6 (48.1% at BJHTCM and 60.1% at WJH). These acupoints come from a subgroup of

very effective points with many indications, and can be applied to a myriad of disorders. Thus, it was not surprising that they were used so commonly in both clinics. However, differences did exist in the usage patterns for other noted and effective points with many indications. For example, LV-3 was very commonly used at BJHTCM (50.6%), and only moderately used at WJH (31.8%). On the other hand, TE-5 was the second most commonly used acupoint at WJH (63.5%), and only moderately used at BJHTCM (21.5%). These differences may be due to individual acupuncturist preference or slight differences in the main complaints seen at the two clinics.[5]

Our acupoint usage analysis was broken down by differing main complaints as well. The results for CVA recovery were analyzed more thoroughly (Figs. 3 and 4), as this main complaint provided a sample size large enough for stronger conclusions to be made (67 or 3.7 Tx/day at BJHTCM, 28 or 5.6 Tx/day at WJH). The 32 common acupoints at both clinics represented a large proportion of the total acupoints used for CVA recovery at both clinics

(77% of points at BJHTCM and 74% of points at WJH were from the shared group). Thus, these shared points are also used commonly in the treatment of CVA. One possibility is that acupuncturists chose acupoints from a set main group for most instances of CVA recovery, and supplemented these ''core'' points with others more related to each individual's particular presentation.

One of the critical questions in the research literature of randomized controlled trial methodology is how to create an acupuncture intervention that on the one hand is reproducible and on the other hand, allows for individually tailored acupuncture treatments. One approach to this tension, is the creation of what has been called ''manualized'' acupuncture.[7,8] This approach is characterized by defining a core set of acupoints for the target condition, to which are added pre-determined points that reflect the unique Chinese medicine pattern or the particular nature of the patient's complaint. One example from our data is the treatment of CVA recovery. Our data demonstrated that the ''core set of points'' (which include the most common acupoints needled for this condition) included points such as LI-4, LI-11, ST-36, GV-20, 24, and scalpmotor, which were used in over 80% of CVA recovery cases at the Beijing Hospital of TCM. At Wan Jing Hospital, LI-4 and TE-5 were used in over 80% of CVA recovery treatments. While differences did exist as to what a given acupuncturist perceived as a ''core'' point, these points did represent a commonality regarding the treatment of CVA, no matter the TCM pattern diagnosis (e.g., wind-heat, windcold, etc.) or accompanying symptomatology. Other less-common points (such as CV-24 or HT-5, as mentioned above) would then be chosen based symptoms, signs, or individual pattern differentiation. Our data and the similar studies from the United States suggest that this manualized approach reflects actual clinical practice and is a valid approach to making the clinical trial of acupuncture intervention have ecological validity.

Other investigations of acupoint utilization have included several studies geared specifically toward low back pain. Kalauokalani et al. sampled seven office-based acupuncturists who evaluated the same patient with chronic low back pain. Of 28 unique points selected, only 4 (14%) were prescribed by two or more acupuncturists.[9] Another study by Sherman et al. examined treatment records ($n = 158$ initial visits) containing the TCM diagnoses and treatments for patients with chronic low-back pain.[10] Data were gathered from a clinical trial and a student clinic, representing 7 acupuncturists and 66 interns/19 faculty acupuncturists, respectively. The authors found that 86 unique acupoints were used in the clinical trial, and 101 were used in the teaching clinic. In the clinical trial, the majority of acupoints (63%) were used for fewer than 5 treatments, and only 5 acupoints were used in more than 20 of the treatments (BL-23, BL-25, BL-40, BL-54, KD-3). Data from the teaching clinic found that only 4 acupoints were used in greater than 25% of treatments (BL-23, 58%; GB-34, 34%; BL-20, BL-40, 27%).

Our data for low back pain reflected only 16 treatments at Beijing Hospital of TCM, and 6 treatments at Wan Jing Hospital. While the small number of treatments (and practitioners sampled) for this condition made a comparison with the data of Kalauokalani et al. and Sherman et al. difficult, similarities and differences did exist. A greater concordance between the two clinics in Beijing was found than was found between acupuncturists in both the Kalauokalani et al. and Sherman et al. studies. Of the 34 different acupoints utilized for low back pain at BJHTCM and 25 different points at WJH, 12 were the same. These included points on the Urinary Bladder meridian (BL-10, BL-20, BL-23, BL-25, BL-26, BL-40, BL-57, and BL-60), Gall Bladder meridian (GB-30 and GB-34), and Du Mai meridian (GV-3 and GV-14). Coincidentally, these points were similar with the common points listed above by Sherman et al. and Kalauokalani et al. Also, 6 acupoints were utilized in more than 50% of cases at BJHTCM (BL-23; GV-3, 81.3%; BL-25, 60–75%; Lumbar JiaJi, 68.8%; BL-57, 56.3%). There were too few treatments at WJH to analyze in this manner. Sherman et al. found that while different acupuncturists tended to choose different acupoints, for each individual acupuncturist, there also existed 5–6 acupoints that were ''favorite'' and were used in greater than 50% of cases. Furthermore, there were 8.4 acupoints used per treatment of low back pain at BJHTCM and 12.5 points used per treatment at WJHTCM. Comparatively, Sherman et al. found that an average of 7.0 acupoints were used per treatment in their clinical trial, and an average of 12.8 needles per treatment at the student clinic.[10] Kalauokalani et al. found that the recommended treatments varied between 5 and 14 acupoints.[9] These values are consistent with what was found at both clinic sites in Beijing, China.

The limitations of this study need to be pointed out. Patient self-selection may have existed due to the limited number of acupuncturist-physicians observed at the clinics. Different acupuncturists become famous for treating certain disorders and thus attract more patients with these conditions. Different main complaint prevalence patterns may have influenced acupoint usage. Other limitations include the fact that our geographic sample is a

sample of convenience, which might impact on the generalizability of the data. The results of three acupuncturists at two clinics may not generalize to the rest of Beijing, much less to the rest of China. Ideally, more clinics and more acupuncturists would have been included in this study.

Despite limitations, our findings are congruent with recent social science studies concerning medicine in China. While some social scientists have attempted to characterize traditional medicine in China as a homogeonous practice,[11,12] recent work by both anthropologists and historians have suggested that a natural heterogeneity has been an integral component of traditional Chinese medicine. For example, the anthropologist Scheid has noted that the representation of a single system of TCM is a ''reification''.[4] Hinrichs attacks portraying Chinese medicine ''as a single bounded rational system'' because it overlooks personal styles and ''neglect[s] internal tensions, contradictions, and non-rational aspects''.[13] Moreover, Hsu's anthropological study on the transmission of Chinese medicine has also demonstrated the need to abandon any idea of a homogeneous practice of Chinese medicine.[14] Our data supports these notions by suggesting that styles and personal approaches lead to some differences in the choice of even so-called ''core'' acupoints, and are fundamental to how Chinese medicine is actually practiced.

Acknowledgements

References

1. Kaptchuk TJ. Acupuncture: theory, efficacy, and practice. *Ann Intern Med* 2002;**136**(5):374—83.
2. Farquhar J. Rewriting traditional medicine in post-Maoist China. *Knowledge and the scholarly medical traditions*. Cambridge: Cambridge University Press; 1995.
3. Hsu E, editor. *Innovation in Chinese medicine*. Cambridge: Cambridge University Press; 2001.
4. Scheid V. *Chinese medicine in contemporary China: plurality and synthesis*. Durham: Duke University Press; 2002.
5. Napadow V, Kaptchuk TJ. Patient characteristics for outpatient acupuncture in Beijing, China. *J Altern Complement Med* 2004;**10**(3):565—72.
6. Xinnong, C. *Chinese acupuncture and moxibustion*. Beijing: Beijing Foreign Languages Press; 1996. p. 590.
7. Schnyer R, Allen J. *Acupuncture in the treatment of depression: a manual for practice and research*. Edinburgh: Churchill Livingstone; 2001.
8. Schnyer R, Allen J. Bridging the gap in complementary and alternative medicine research: manualization as a means of promoting standardization and flexibility of treatment in clinical trials of acupuncture. *J Altern Complement Med* 2002;**8**(5):623—34.
9. Kalauokalani D, Sherman K, Cherkin D. Acupuncture for chronic low back pain: diagnosis and treatment patterns among acupuncturists evaluating the same patient. *S Med J* 2001;**94**(5):486—92.
10. Sherman K, Cherkin D, Hogeboom C. The diagnosis and treatment of patients with chronic low-back pain by traditional chinese medical acupuncturists. *J Altern Complement Med* 2001;**7**(6):641—50.
11. Kendall D. *Dao of Chinese medicine: undestanding an ancient healing art*. New York: Oxford University Press; 2002.
12. Porkert M. *The theoretical foundations of Chinese medicine*. Cambridge: MIT Press; 1974.
13. Hinrichs T. New geographies of Chinese medicine. *Osiris* 1998;**14**:2870—3025.
14. Hsu E. *The transmission of Chinese medicine*. Cambridge: Cambridge University Press; 1999.

Available online at www.sciencedirect.com

SCIENCE @ DIRECT°