

## Traditional Chinese Medicine for Sexual Dysfunction: Review of the Evidence



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### ABSTRACT

**Introduction:** Despite the growing popularity of traditional Chinese medicine (TCM) in the Western world, biomedical students and practitioners struggle to understand TCM and how it relates to their standard diagnosis and treatment practices.

**Aims:** To describe the fundamentals of TCM theory and practice relevant to sexual dysfunction; to review and critique the current state of TCM research within Western biomedical literature; and to identify sites for improvement of future research and for collaborative integration of TCM and biomedicine in practice.

**Methods:** Information about TCM from an insider perspective was obtained from English-language textbooks and lectures intended to teach Western students its theory and practice. PubMed search using Medical Subject Heading terms for Western sexual diagnoses and TCM treatments was performed in April and October 2017 to represent the evidence for TCM in Western biomedical literature. Articles in non-English languages and without human subjects were excluded.

**Main Outcome Measures:** 27 studies were included in this review. The most commonly studied intervention was acupuncture. An equal number of studies addressed sexual dysfunction in men and women, but only women were included in studies of physically passive mindfulness meditation.

**Results:** Compared with Western biomedicine, TCM offers a more interdisciplinary and individualized approach to disease and its treatment. This embrace of individual idiosyncrasy in diagnosis and treatment presents a challenge to Western biomedical research norms that rely almost exclusively on quantitative methods that compare large and homogeneous groups with a fixed diagnosis and treatment regimen.

**Conclusion:** TCM offers a very different understanding of the human body, health, and disease from Western biomedicine. There is value in the study and application of these 2 medical systems, particularly for biopsychosocial problems of sexual dysfunction. However, this must be done cautiously, with attention to appropriate study design, to avoid shallow and unscientific cultural appropriation of TCM practices. **Chubak B, Doctor A. Traditional Chinese Medicine for Sexual Dysfunction: Review of the Evidence. Sex Med Rev 2018;6:410–418.**

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**Key Words:** Traditional Chinese Medicine; Sexual Dysfunction; Acupuncture; Meditation; Chinese Herbal Drugs; Yoga

### INTRODUCTION

The theory and practice of traditional Chinese medicine (TCM) span millennia, nations, languages, and cultures in the East. They are a living science, the subject of ongoing study, analysis, and evolution by TCM practitioners. In the Western

world, they are a recent and exotic trend, with burgeoning popularity in the decades since acupuncture was introduced to American public media with President Nixon's visit to China.<sup>1,2</sup>

This growth has not been without its pains, as Western biomedical authorities struggle to reconcile their clinical and research practices with an Eastern system that is fundamentally different in its epistemology, physiology, diagnosis, and treatment. In contrast to Western medical scholarship, which privileges the most recent data and dismisses older literature as unreliable or irrelevant, TCM practice relies heavily on ancient texts, such as the *Inner Canon of the Yellow Emperor* (dated to the 1st–3rd centuries BCE).<sup>3</sup> Western physiology is based on biology and organic chemistry, whereas TCM physiology is best

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understood in terms of physics, with bodies composed of *qi*, universal energies that vibrate and flow, resonating with their parts and surrounding structures.<sup>4</sup> Biomedical science relies on evidence derived from homogenized groups, whose singular difference is the intervention studied; the logic of TCM defies such homogeneous groupings, with diagnoses and treatments tailored to the needs of an individual body in its particular environment.<sup>5</sup>

In Western medical systems, in which financial and temporal pressures on the health care encounter can leave patients feeling “like widgets in a production line,”<sup>6</sup> the idiosyncrasy of TCM has obvious appeal. Moreover, despite its success at treating infectious diseases of a single etiology, biomedicine struggles with more complex and chronic illnesses—including the biopsychosocial problems of sexual dysfunction—which better fit the relational explanatory model of TCM. No wonder that in the United States increasing reliance on patient satisfaction as a quality metric has been accompanied by an increase in the number hospitals offering TCM treatments, despite making themselves vulnerable to accusations of quackery as a result.<sup>7</sup> The National Institutes of Health have grudgingly acknowledged TCM to be worthy of funded scientific study, but only insofar as it is integrated with mainstream Western biomedicine, thus being complementary rather than an alternative.<sup>8</sup>

The challenge of this imperative lies in the fundamental differences between Western biomedicine and TCM: can such incommensurable sciences be combined in a way that respects the integrity of each? With this review, we aim to begin working toward an answer to this question by providing a systematic narrative review of the studies evaluating TCM treatments for male and female sexual dysfunctions that exist within Western biomedical literature, including their study subjects, interventions, comparators, and outcomes. Unlike previous reviews of TCM treatment for sexual dysfunction, which have focused exclusively on a single dysfunction or single type of intervention, this review synthesizes the published data for all sexual diagnoses and types of TCM treatments, including herbal medication, acupuncture, mindfulness meditation, and *taichi* and yoga. Combining multiple diagnoses and interventions within a single review more accurately reflects patient experience, in which sexual diagnoses are frequently comorbid and at least 2 treatments are often applied simultaneously. Through critique of the existing literature, we will see what changes in study design might improve the quality of future research.

## METHODS

This review is written from a Western perspective for a Western audience and presumes greater familiarity with biomedicine than with TCM. In part, this reflects the inherent bias of its authors, who work within the US health care system and whose linguistic limitations preclude evaluation of any studies of TCM in its native languages. It also reflects our

**Table 1.** Medical Subject Heading search terms

Traditional Chinese medicine interventions
Traditional Chinese medicine
Acupuncture
Meditation
Tai chi
Yoga
Sexual diagnoses
Sexual dysfunction
Orgasm
Sexual desire
Sexual arousal
Vulvodynia
Vestibulitis
Dyspareunia
Erectile dysfunction
Premature ejaculation

recognition that the struggle to integrate Western biomedicine and TCM is a peculiarly Western problem, with biomedicine having been more successfully combined with the practice of TCM in the Far East. For example, the clinical practice of andrology in China typically combines Western-style urology and its TCM equivalent, *nanke*<sup>9</sup>; practitioners offer diagnoses and treatments from the 2 armamentaria, with patients adopting either or all of them according to personal preference.<sup>10</sup> Further historical and anthropologic study is needed to better understand how this balance occurred and is maintained in the East, so that we might learn to replicate and improve on it worldwide.

The literature search was conducted in PubMed using Medical Subject Heading search terms representative of Western sexual diagnoses in combination with TCM treatments (Table 1). To maximize capture of studies related to disorders of sexual desire, arousal, and orgasm, all of which have undergone significant changes in nomenclature,<sup>11</sup> these were searched without reference to specific pathology. Imposed constraints included English-language publications and human study subjects; case reports and review articles without novel study findings also were excluded. Given the relative paucity of original research into TCM treatments for sexual dysfunction within the Western biomedical literature, all such remaining studies were included, regardless of design, setting, population, or timeframe. The initial search was conducted in April 2017 and then repeated in October 2017 to confirm its accuracy and ensure inclusion of the most up-to-date literature before publication.

Data accrued from the collected research studies were organized by study intervention and subdivided according to diagnosis and sex for comparative analysis; included studies are listed in Table 2. A systematic narrative synthesis is provided, with information presented in the text to summarize the design and findings of included studies and to explore the relations between the studies and their findings. We begin with a brief primer to

**Table 2.** Articles reviewed

Citation	TCM treatment	Diagnosis	Subjects' sex	Control group
Aydin S, Ercan M, Caskurlu T, et al. Acupuncture and hypnotic suggestions in the treatment of non-organic male sexual dysfunction. <i>Scand J Urol Nephrol</i> 1997;31:271–274	Acupuncture	Non-organic erectile dysfunction	Male	Yes
Curran S, Brotto LA, Fisher H, et al. The ACTIV study: acupuncture treatment in provoked vestibulodynia. <i>J Sex Med</i> 2010;7:981–995	Acupuncture	Provoked vestibulodynia	Female	No
Danielsson I, Sjoberg I, Ostman C. Acupuncture for the treatment of vulvar vestibulitis: a pilot study. <i>Acta Obstet Gynecol Scand</i> 2001;80:437–441	Acupuncture	Vestibulitis	Female	No
Engelhardt PF, Daha LK, Zils T, et al. Acupuncture in the treatment of psychogenic erectile dysfunction: first results of a prospective, randomized, placebo-controlled study. <i>Int J Impot Res</i> 2003;15:343–346	Acupuncture	Non-organic erectile dysfunction	Male	Yes
Khamba B, Aucoin M, Lytle M, et al. Efficacy of acupuncture treatment of sexual dysfunction secondary to antidepressants. <i>J Altern Complement Med</i> 2013;19:862–869	Acupuncture	Ssri-associated sexual dysfunction	Male and female	No
Kho HG, Sweep CG, Chen X, et al. The use of acupuncture in the treatment of erectile dysfunction. <i>Int J Impot Res</i> 1999;11:41–46	Acupuncture	Erectile dysfunction	Male	No
Oakley SH, Walther-Liu J, Crisp CC, et al. Acupuncture in premenopausal women with hypoactive sexual desire disorder: a prospective cohort pilot study. <i>Sex Med</i> 2016;4:e176–e181	Acupuncture	Hsdd	Female	No
Powell J, Wojnarowska F. Acupuncture for vulvodynia. <i>J R Soc Med</i> 1999;92:579–581	Acupuncture	Vulvodynia	Female	No
Sahin S, Bicer M, Yenice MG, et al. A prospective, randomized, controlled study to compare acupuncture and dapoxetine for the treatment of premature ejaculation. <i>Urol Int</i> 2016;97:104–111	Acupuncture	Premature ejaculation	Male	Yes
Schlaeger JM, Xu N, Mejta CL, et al. Acupuncture for the treatment of vulvodynia: a randomized wait-list controlled pilot study. <i>J Sex Med</i> 2015;12:1019–1027	Acupuncture	Vulvodynia	Female	Yes
Sunay D, Sunay M, Aydogmus Y, et al. Acupuncture versus paroxetine for the treatment of premature ejaculation: a randomized, placebo-controlled trial. <i>Eur Urol</i> 2011;59:765–771	Acupuncture	Premature ejaculation	Male	Yes
Xiao Y. Treatment of functional retrograde ejaculation with acupuncture and TCM herbal drugs. <i>J Tradit Chin Med</i> 2002;22:286–287	Acupuncture and herbal medication	Retrograde ejaculation	Male	Yes
Yaman LS, Kilic S, Sarica K, et al. The place of acupuncture in the management of psychogenic impotence. <i>Eur Urol</i> 1994;26:52–55	Acupuncture	Non-organic erectile dysfunction	Male	No
Brotto LA, Basson R. Group mindfulness-based therapy significantly improves sexual desire in women. <i>Behav Res Ther</i> 2014;57:43–54	Meditation	HSDD and/or FSAD	Female	Yes
Brotto LA, Basson R, Luria M. A mindfulness-based group psychoeducational intervention targeting sexual arousal disorder in women. <i>J Sex Med</i> 2008;5:1646–1659	Meditation	FSAD	Female	Yes
Brotto LA, Erskine Y, Carey M, et al. A brief mindfulness-based cognitive behavioral intervention improves sexual functioning versus wait-list control in women treated for gynecologic cancer. <i>Gynecol Oncol</i> 2012;125:320–325	Meditation	HSDD and/or FSAD	Female	Yes
Brotto LA, Seal BM, Rellini A. Pilot study of a brief cognitive behavioral versus mindfulness-based intervention for women with sexual distress and a history of childhood sexual abuse. <i>J Sex Marital Ther</i> 2012;38:1–27	Meditation	HSDD and/or FSAD	Female	Yes

(continued)

Table 2. Continued

Citation	TCM treatment	Diagnosis	Subjects' sex	Control group
Silverstein RG, Brown AC, Roth HD, et al. Effect of mindfulness training on body awareness to sexual stimuli: implications for female sexual dysfunction. <i>Psychosom Med</i> 2011;73:817–825	Meditation	None	Female	Yes
Ben-Josef AM, Chen J, Wileyto P, et al. Effect of Eischens yoga during radiation therapy on prostate cancer symptoms and quality of life: a randomized phase II trial. <i>Int J Radiat Oncol Biol Phys</i> 2017;98:1036–1044	Yoga	Erectile dysfunction	Male	Yes
Ben-Josef AM, Wileyto EP, Chen J, Vapiwala N. Yoga intervention for patients with prostate cancer undergoing external beam radiation therapy: a pilot feasibility study. <i>Integr Cancer Ther</i> 2016;15:272–278	Yoga	Erectile dysfunction	Male	No
Dhikav V, Karmarkar G, Gupta M, et al. Yoga in premature ejaculation: a comparative trial with fluoxetine. <i>J Sex Med</i> 2007;4:1726–1732	Yoga	Premature ejaculation	Male	Yes
Dhikav V, Karmarkar G, Verma M, et al. Yoga in male sexual functioning: a noncomparative pilot study. <i>J Sex Med</i> 2010;7:3460–3466	Yoga	None	Male	No
Kim HN, Ryu J, Kim KS, et al. Effects of yoga on sexual function in women with metabolic syndrome: a randomized controlled trial. <i>J Sex Med</i> 2013;10:2741–2751	Yoga	None	Female	Yes
Mamidi P, Gupta K. Efficacy of certain yogic and naturopathic procedures in premature ejaculation. <i>Int J Yoga</i> 2013;6:118–122	Yoga	Premature ejaculation	Male	Yes
Feng XT, Qin CB, Leng J, et al. Yidiyin, a Chinese herbal decoction, improves erectile dysfunction in diabetic patients and rats through the NO-cGMP pathway. <i>Biosci Biotechnol Biochem</i> 2012;76:257–263	Herbal medication	Erectile dysfunction	Male	Yes
Guo J, Gao QH, Wang F, et al. Efficacy and safety of qiaoshao formula on patients with lifelong premature ejaculation of gan (liver) depression and shen (kidney) deficiency syndrome: a randomized controlled trial. <i>Chin J Integr Med</i> 2016;22:889–893	Herbal medication	Premature ejaculation	Male	Yes
Santos CA Jr, Reis CS, Destro-Saade R, et al. Tribulus terrestris versus placebo in the treatment of erectile dysfunction: a prospective, randomized, double-blind study. <i>Actas Urol Esp</i> 2014;38:244–248	Herbal medication	Erectile dysfunction	Male	Yes

FSAD = female sexual arousal disorder; HSDD = hypoactive sexual desire disorder; SSRI = selective serotonin reuptake inhibitor; TCM = traditional Chinese medicine.

TCM diagnosis and treatment, not only to educate readers who are unfamiliar with this theory and practice but also for transparency regarding our approach to them. The latter is essential, because TCM is not a monolithic entity, but instead varies across time and space: this variation is particularly marked for treatment practices in communist China, where medical training and practice patterns are more standardized and regimented than elsewhere in the Eastern world.<sup>12</sup> Rather than conforming specifically to contemporary Chinese TCM practice, we emphasize those aspects of TCM that are universally accepted and justify the grouping together of geographically disparate practices under that single name.

## UNDERSTANDING SEXUAL DYSFUNCTION IN TCM: A PRIMER

Health in TCM is synonymous with *dao*, literally “the way,” but more accurately understood as the natural order by which living beings exist and develop in the world. *Qi* is the basic material of existence, which manifests in various forms: earthly or postnatal *qi* is the stuff of the human body interacting with its surroundings, and primordial or prenatal *qi* is the body as it comes into being, with health factors that are not influenced by changes in diet or environment. Optimal health is characterized by smooth, correct *qi* flow and entrained vibrations of body parts with each other, in resonance with the natural and social structures that surround them.<sup>13</sup>

Although the TCM body, like the biomedical body, is constituted of parts, more clinically relevant is the network of channels that connect them, through which *qi* circulates. The influence of these channels is not limited to the organ for which they are named: the kidney, liver, heart, and midline *du mai* and *ren mai* channels all contribute to sexual health. Unlike Western biomedical diagnoses, which are typically descriptive of the signs or symptoms by which they manifest, TCM diagnoses describe the *qi* imbalance that is the underlying etiology of disease. Imbalances are described according to the affected channels, whether there is a proper flow of *qi*, and whether their *qi* is excessive or deficient. Direction of flow is described as *yin* or *yang*: although *yin* is conventionally female and *yang* is conventionally male, each body, regardless of sex or gender, requires a balance of both. A sufficiency of *jing*, “vital essence,” is particularly important to sexual health: it is a form of *qi* that represents the body’s capacity for creativity, growth, and reproduction, manifesting in men as semen and in women as menstrual blood.<sup>14</sup>

As in Western biomedical practice, a TCM diagnosis is made by history and physical examination, including a thorough review of systems and psychosocial assessment. TCM does not distinguish between mental and physical phenomena, all of which are based on *qi*, and the relations between body parts differ between the TCM and Western body constructs. Therefore, TCM practitioners might find diagnostic significance in

comorbidities that would likely be interpreted as incidental or irrelevant by practitioners of biomedicine. For example, in TCM practice, erectile dysfunction is a symptom whose combination with low back pain and tinnitus suggests a diagnosis of kidney *qi* insufficiency<sup>15</sup>; if it is comorbid with insomnia, cognitive impairment, palpitations, and weakness, then heart and spleen vacuity is diagnosed as the more likely culprit.<sup>16</sup> Physical examination focuses on the quality of the patient’s pulse and the appearance of the patient’s tongue: *qi* deficits reveal themselves with a weak, thin pulse and thin, pale coat to the tongue; a superabundance of heat shows itself with a red, thick-coated tongue and rapid, wiry pulse.<sup>14</sup> Although such assessments of pulse and tongue are taught to students of biomedicine, a preference for seemingly more objective, quantitative data has decreased their use. Some skepticism about these TCM examination findings is appropriate,<sup>17</sup> but it is important to remember that poor inter-rater reliability also is a problem in Western biomedicine<sup>18</sup> and does not justify rejection of TCM as invalid or unscientific in comparison.

Diagnoses, once made, can be quite complex, with the subtle networking of organ channels allowing for enormous variation in their potential irregularities, not only between patients but also within a single patient. The primary diagnosis in an individual patient also can change over time, with circumstance and treatment. The recommended treatment regimen can be similarly complex, featuring some combination of herbal medications, meditation practices, *taichi* or other physical exercises, and acupuncture along the affected channels to manipulate their pathologic flow. Each of these potential interventions has many variants: for example, acupuncture can be conducted with different kinds of needle, with or without electrical stimulation, and with or without moxibustion; there are many different traditions of meditation and exercise (yoga, the Indian Ayurvedic cousin of TCM *taichi*, being the most popular in the West); herbal compounds are available in as many varieties as there are flora. Which of these many options is used can vary with the particular training, comfort level, and personal preference of the provider. There are World Health Organization guidelines for training in TCM, but they are non-specific for preferred treatment practices once training is complete.<sup>19</sup>

## RESULTS

Our literature search yielded 27 English-language, human-subject trials of TCM interventions for the treatment of sexual dysfunctions. Half of these evaluated men and half evaluated women; 1 study concerned the treatment of sexual dysfunction secondary to antidepressant medication in men and women.<sup>20</sup> This balance reflects the widespread appeal of TCM treatments beyond the confines of sex or gender. However, this appeal is not reflected in the numbers of study subjects, which were uniformly small: the largest study, by Sahin et al,<sup>21</sup> included 120 subjects, with only 30 in each comparison group. Only 15 of 27 studies featured a control group, and these controls varied among

studies, with some having no or delayed treatment and others treated according to Western biomedical standards. In recognition of these inherent sources of bias, most reports describe themselves as “pilot studies,” intended to explore the feasibility and appropriateness of future research, rather than having a goal of definitively determining the relative efficacy of TCM interventions.

The most commonly studied intervention is acupuncture, evaluated in 13 of 27 studies, reflecting the established Western bias favoring acupuncture therapy above other TCM interventions. After acupuncture, the most commonly studied TCM-type interventions (in order from most to least prevalent in our search) are yoga exercise (6 studies), mindfulness meditation (5 studies), and herbal compounds (3 studies). This differs from the relative popularity of TCM treatments in the Eastern world, where herbal medicines are preferred, followed by exercise and meditative practices, with acupuncta (ie, acupuncture and moxibustion) treatments the least frequently used option.<sup>16</sup> When subdivided by sex, physical interventions were found to privileged in studies of men, with 7 assessing the efficacy of acupuncture, 4 assessing yoga, 3 assessing the consumption of herbal medicine, and none considering meditation. In contrast, meditation is the active intervention in 5 studies of women, second only to acupuncture.

Given the overall low quality of the collected studies—because of their small numbers of subjects, paucity of reliable control groups, and other sources of bias—a quantitative synthesis of their findings is inappropriate. Instead, the discussion that follows provides a narrative synthesis of the research for each TCM intervention, with an emphasis on the methodologic challenges they face and how they are met with varying degrees of success.

## DISCUSSION

### Acupuncture

Despite being the best-studied TCM therapy in the English-language medical literature, the articles published about acupuncture collectively have significant problems of methodology and definition. These are not unique to acupuncture as an intervention, but they weaken the very foundation of any attempt to evaluate TCM from the perspective and context of Western biomedicine. Before the efficacy of any treatment intervention can be assessed, affected subjects must be recruited, all diagnosed with the condition to be treated. However, as mentioned earlier, Western diagnoses do not have precise equivalents in TCM: a man with organic erectile dysfunction does not necessarily have kidney *qi* deficiency; instead, his diagnosis might be one of liver vacuity.

A few studies compensate for this diagnostic variability by recruiting subjects according to their Western biomedical diagnoses and then re-evaluating each enrolled subject to give that subject a TCM diagnosis. The recruitment processes in these studies vary in the rigor with which they impose a biomedical

diagnosis: Khamba et al<sup>20</sup> enrolled patients according to their self-report of sexual dysfunction secondary to antidepressant use; Oakley et al<sup>22</sup> relied on a validated questionnaire, the Female Sexual Function Index, to enroll patients with hypoactive sexual desire disorder; and Curran et al<sup>23</sup> enrolled only subjects who were examined by an experienced physician to be given a diagnosis of provoked vestibulodynia.

Once enrolled, the patients in these studies were evaluated by TCM practitioners and given an appropriate diagnosis. In consequence, the cohort of women with a single, unifying diagnosis of provoked vestibulodynia in the ACTIV study by Curran et al<sup>23</sup> was redefined as a series of individuals with varying degrees of splenic, liver-, heart-, blood-, or phlegm-associated pathology. The acupuncture administered to each subject was tailored to her specific TCM diagnosis, so that each subject experienced a different intervention. Although true to TCM practice, this undermines the categorical comparability that is fundamental to assessing the efficacy of a therapeutic intervention in Western biomedical research.

Other studies attempt to address this problem by regularizing their intervention, administering to each subject a fixed acupuncture pattern, regardless of individual TCM diagnosis. For example, in the randomized waitlist placebo-controlled trial by Schlaeger et al,<sup>24</sup> women with self-reported vulvodynia were not given a TCM diagnosis, and all subjects in the treatment group were needled at the same points and in the same style. This uniformity conforms to Western biomedical research norms but defies the logic and principles of TCM on which the treatment is based. Furthermore, given the different acupuncture techniques applied across Eastern cultures and traditions, the choice of a single style is peculiarly arbitrary.

Comparison of a therapeutic intervention to a control group is essential to determining its biomedical efficacy, but for acupuncture, it is uncertain what constitutes an appropriate control. The choice of a waitlist control group in the study by Schlaeger et al<sup>24</sup> precludes blinding and introduces expectancy bias. A better alternative might be the administration of sham acupuncture, but this means different things in different studies. For example, the sham controls in a study of acupuncture for erectile dysfunction by Engelhardt et al<sup>25</sup> were needled in locations appropriate for headache, whereas the sham controls in the studies of acupuncture for premature ejaculation by Sahin et al<sup>21</sup> and Sunay et al<sup>26</sup> experienced shallow and non-penetrative needling. It is unclear which of these is the better active control.

In the studies by Sahin et al<sup>21</sup> and Sunay et al,<sup>26</sup> therapeutic acupuncture proved more effective than the sham version, but was less effective than Western-style treatment with selective serotonin reuptake inhibitors. Sceptics of TCM might be tempted to conclude from studies such as these that acupuncture is less effective than Western biomedical pharmacotherapy, but such a conclusion would be improper. Studies like those by Sahin et al<sup>21</sup> and Sunay et al,<sup>26</sup> which characterize their subjects according to biomedical diagnoses only and administer a

standardized needling protocol, gain comparative research verisimilitude by compromising the accuracy with which they represent TCM. In practice, the professionals who administer acupuncture are committed to TCM principles of individualized diagnosis and treatment; studies that standardize their diagnoses and interventions in conformity with Western biomedicine are ultimately of dubious relevance.

## Meditation

Although there are substantially fewer studies available for meditation than for acupuncture, they are overall of better quality, with none lacking a control group: this is much to the credit of Lori Brotto, who authored 4 of the 5 articles found by our literature search. The nature of the control varies among the studies: Brotto used a waitlist control, which as noted earlier is not ideal, precluding blinding and introducing an element of expectancy bias. In contrast, Silverstein et al<sup>27</sup> used active controls, which consisted of training and practice in other forms of learning.

The study by Silverstein et al<sup>27</sup> also is unique for the rigor and specificity of its intervention, which consisted of *Samatha* and *Vipassana* forms of mindfulness meditation, done for at least 30 minutes in the context of a 1-hour meditation laboratory, which met 3 times weekly over the course of a single college semester. These meditative practices emphasize attentiveness to an object or objects, in contrast to the cultivation of acceptance that is more typical of the Western-style of mindfulness meditation.<sup>27</sup> In contrast, the work of Brotto et al<sup>28,29</sup> features mindfulness meditation admixed to variable degrees with other psycho-educational interventions, including cognitive behavioral therapy and sex education. In addition, they did not adhere to a single schedule for intervention: for example, 1 study in cancer survivors provided subjects with 3 90-minute sessions conducted 1 month apart<sup>28</sup> and another focused on female sexual arousal disorder provided 3 90-minute sessions 2 weeks apart.<sup>29</sup>

Given such variation in study intervention, no specific meditative regimen can be recommended based on the existing evidence. However, regardless of the specific practice used, mindfulness meditation is demonstrably better than the alternative (whether that alternative is doing nothing, as in the studies by Brotto et al, or learning and practicing another skill, as in the study by Silverstein et al) for increasing a woman's interoceptive awareness of her sexuality, with associated subjective improvements in desire, arousal, and associated satisfaction, regardless of her degree of sexual (dys)function at baseline.

## Yoga

Although yoga is not a Chinese practice, having its origins in Indian Ayurvedic medicine, we included it in our literature search because of its similarity to the TCM practice of *taichi*, and because it tends to be grouped together with TCM in the Western imagination. Like acupuncture, yoga has gained extraordinary popularity in the Western world since the 1970s,

and it is sometimes offered together with *taichi*, *qi gong*, and other meditative movement practices. *Taichi* has been featured in the Western popular media for promoting genital health,<sup>30</sup> but our search found no studies on this phenomenon; in contrast, yoga has been better studied, with 6 studies identified.

In the West, yoga is more popular among women than men, so we were surprised to find that 5 of 6 studies that consider yoga a medical intervention used it to treat male sexual dysfunctions. There are many different styles of yoga, with most studies adhering to the classic hatha yoga, but the 2 for patients undergoing radiotherapy for prostate cancer applied a less well-known form of Iyengar yoga developed by Roger Eischens.<sup>31,32</sup> Hatha practice consists primarily of *asanas* (postures), but also incorporates *pranayama* (breathing exercises) and *shavasana* (meditation). Thus, the distinction made between yoga and meditation practices is an artificial one, and it is uncertain to what degree the effects of yoga are a product of physical exercise vs meditation. Further study comparing yoga with mindfulness meditation would be helpful to elucidate this.

The best quality study—for numbers of subjects, validated outcomes, and control groups—is by Dhikav et al,<sup>33</sup> looking at the effect of yoga practice on premature ejaculation. The study enrolled 68 men diagnosed with premature ejaculation based on intravaginal ejaculation latency time, with half choosing treatment with yoga and the rest choosing a daily selective serotonin reuptake inhibitor treatment. The yoga regimen consisted of 12 *asanas* and 2 *pranayams*, done 1 hour daily for 8 weeks; in addition, patients were instructed to practice *mehabbed mudra*, pelvic exercises that are similar to Kegel exercises, 15 to 20 times a day. After 8 weeks, mean intravaginal ejaculation latency time of the yoga group was nearly double that of the selective serotonin reuptake inhibitor control group. This study has particular clinical significance, because it compares a TCM intervention with an appropriate Western biomedical alternative. However, it is not without flaws: there is selection bias from the subjects choosing their preferred treatment, and the intervention included full-body hatha yoga and pelvic Kegel-type exercises, so it is unclear which was the essential treatment.

## Herbal Medication

Ambiguity regarding what parts of the study intervention is the active component is the chief difficulty with studies of herbal medications. The TCM pharmacopeia is extensive: there is a 300-page textbook dedicated to the herbs used to treat sexual dysfunction alone.<sup>34</sup> Often, medications are compounded to include many ingredients, as in the study by Xiao,<sup>35</sup> in which acupuncture was augmented with a decoction composed of 9 to 12 herbs, depending on the patient's precise TCM diagnosis pattern. Sometimes, as in the studies by Feng et al<sup>36</sup> and Guo et al,<sup>37</sup> the medication is proprietary and its specific components are not disclosed. For patients abroad, it might be difficult to obtain these medications; for Western biomedical health care providers, it is virtually impossible to know which component

has what effect on the patient, making it difficult to safely and responsibly offer TCM herb combinations to patients.

## CONCLUSION

Despite several decades of great and growing interest in TCM among patients and practitioners of biomedicine in the Western world, we have not yet managed to integrate these very different practices in research or clinical practice. With this review of the English-language, human-subject studies that attempt to do so for problems of sexual dysfunction, we identify several challenges that will need to be met for successful integration:

- Because TCM and Western biomedical pathophysiology differ, there is no direct correlation between their diagnoses, making straightforward exchanges for comparison between the disciplines unreliable.
- Comparison with a control group is essential for demonstrating the efficacy of any treatment intervention, but what constitutes an appropriate control for certain TCM treatments (specifically acupuncture and meditation) is currently undetermined.
- Protocols for TCM treatment are highly variable, in part because of the extensive history, geography, and cultural heterogeneity of TCM. It is probable that certain acupuncture, meditation, movement, and medication protocols are more effective, efficient, or cost saving than others, but work is needed to identify the optimal variations.
- Existing studies of TCM interventions for sexual dysfunction demonstrate a marked sex bias, with men treated with somatic interventions through acupuncture, yoga, and medication and women treated with meditation.

We suspect that this sex bias is a Western artifact, reflecting our historic tendency to interpret female sexual dysfunction as a form of psychopathology and male sexual dysfunction preferentially interpreted as physical in etiology. However, current scholarship in sexual science argues against this interpretive framework by demonstrating neurochemical sameness in male and female sexuality<sup>38</sup> and the importance of physical entrainment for sexual satisfaction.<sup>39</sup> In response, interventions that target the central nervous system are being added to the Western biomedical treatment armamentarium, including physical therapy techniques inspired by TCM.<sup>40</sup> Thus, by providing a model for sexual activity that synchronizes the TCM body construct with that of Western biomedicine, the recent neuroscientific turn in sexual medicine could provide novel opportunities for the reconciliation of these important medical practices.

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