

The role of Traditional diet and *Yoga* for infertility: A blend and balance of Traditional knowledge and Modern medicine

Kochhar KP^{1*}, Oberoi AK², Hazra S³ & Lal PR²

¹Department of Physiology, AIIMS, New Delhi- 110029;

²Department of Food and Nutrition, Lady Irwin College, Delhi University, New Delhi-110001;

³Department of Physical Medicine & Rehabilitation, AIIMS, New Delhi- 110029

E-mail: kpkochhar6@gmail.com

Received 14 March 2017, revised 10 April 2017

Today, we are faced with numerous illnesses particularly related to genetics, lifestyle and environment such as diabetes, cardiovascular disorders, hypertension, cancer, infertility and various others, some of them being modifiable than the others. Modern medicine integrates various traditional diets and practices including *yoga* to promote health, longevity, quality of healthcare and plays a significant role in combating various lifestyle related disorders as a preventive and rehabilitative method. *Yoga* has been considered as a complementary and alternative medicine for treating infertility. By improving the integration of physiological as well as psychological systems, *yoga* therapies play a significant function in improving reproductive function. Holistic approaches to infertility management, such as Traditional Indian Medicine (TIM), Traditional Chinese Medicine (TCM) remains the most ancient yet living traditions playing a vital role in prevention of infertility by strengthening body's self healing and balancing mechanism and by regulating hormones such as follicle stimulating hormone and Luteinising hormone. These are perceived as being lower cost, safer, or more effective treatments. This review examines the role ancient traditional dietary practices combined with *yoga* as evidence based protocol to face the current challenges in healthcare with special reference to infertility.

Keywords: Traditional diet, *Yoga*, Infertility, Diseases, Food, Medicine

IPC Int. Cl.⁸: A01D 12/03, A01D 10/08, A61K 36/00, A23L 33/00

Infertility, a Public health problem

Infertility is a problem of global proportions and has been recognized as a public health issue worldwide¹. The burden of infertility in the community has so far been under-recognised. Although some perceive infertility as a quality-of-life issue, the practice committee of American Society for Reproductive Medicine, 2013 regards infertility as a disease leading to decreased levels of personal well-being with serious implications on social, emotional and psychological wellbeing resulting in distress, depression as well as discrimination and ostracism². It is a critical component of reproductive health and has often been a neglected issue³.

The importance of infertility as a public health problem affecting the individual and the family's mental and social wellbeing has resulted in its inclusion in the National program for reproductive and child health. Infertility and its treatment lead to

economic burden on the society as well affecting many countries and many different health systems. The WHO estimates the overall prevalence of primary infertility in India to be between 3.9 and 16.8 %⁴. It has been well documented that lifestyle factors can affect general health and fertility lifestyle factors, including age when starting a family, nutrition, weight management, exercise, psychological stress, cigarette smoking, recreational and prescription drugs use, alcohol and caffeine consumption, environmental occupational exposures, preventative care, and other behaviors are modifiable and may impact fertility. Dietary profile and nutritional status have been implicated as causative factors in female infertility with special reference to ovulatory infertility and a role in its prevention^{5,6}.

Traditional diets and transition to modernity

The history of dietary prescriptions dates back, perhaps to the origin of the human race. Modern Nutrition has undergone an epidemiologic shift and a

*Corresponding author

significant transition in dietary preferences and practices over the last few decades, more so in India.

Diet has played an important role in both preventive and therapeutic medicine and traditional Indian medicine has always laid emphasis on physiologic individuality and also on culinary and prescriptive remedies with reference to food, what to eat and what not to eat across various times of the day, seasons, geography, physiological and psychosomatic states⁷. Nature endowed genetic profile versus nurture induced epigenetic modifications debate has also been revisited and come full circle from integrative systems physiology through the various 'omics' to again nutritional systems biology traversing proteomics, metabolomics, adipo biology, gut microbiomics, geronto biology. From peri implantation, through fetal, natal, paediatric, adulthood, aging to transgenerational via various physiologic epiphenomena, imprinting, bio rhythms oscillations, metabolic and neuronal programming and malprogramming, mitochondrial function and dysfunction and chromosomal changes or silencing of DNA expression damage can affect our epiphenotype and carry it forward. What our maternal grandparents ate, where they lived can all influence our health and disease profile. Extensive research within the last few decades from our laboratory and others has indicated that phytochemicals and dietary additives including spices and herbs in traditional Indian diet and Indian lifestyle practices may prevent various chronic metabolic and degenerative illnesses including cancerous, diabetic, cardiovascular, pulmonary, gastrointestinal, neurological, and dermatological, Infertility and autoimmune diseases.

Dietary spices: Kitchen to Pharmacy

Herbs, condiments and spices have been used since ancient times by physicians and laymen to treat a great variety of human diseases, yet many of them need to pass tests of modern, controlled, clinical experimentation. India with its wide climatic conditions and topographical features is perhaps unrivalled in the world and a wide variety of species of herbs can ever be grown with ease. With these factors, naturally the Indian medicinal flora is one of the richest and cosmopolitan one with high therapeutic potentialities.

Dietary spice maintain human health by their antioxidative, chemopreventive, antimutagenic, antiinflammatory, immune modulatory effects on

cells and a wide ranging array of putative beneficial effects on human health via action on gastrointestinal, cardiovascular, respiratory, metabolic, reproductive, neural and other systems.

Several active ingredients of spices including capsaicin (red pepper) piperine (black pepper), curcumin (turmeric), eugenic acid (clove), ferulic acid (turmeric) and myristic acid (mace *amla*) have been reported to influence lipid metabolism predominantly by mobilization of fatty acids. Curcumin and capsaicin altered bile salt secretion to make it less lithogenic and also lowered cholesterol levels. Garlic and turmeric are potent vasorelaxants as well as reduce the atherogenic properties of cholesterol. Curcumin, inhibited platelet aggregation induced by arachidonate, adrenaline and collagen and thromboxane B2 production from exogenous arachidonate with a concomitant increase in the formation of 12-lipoxygenase products. Dietary modifications will only work if they are in consonance with individual preferences, culture values, and philosophical orientations toward health and disease.

Traditional food aspects related to Infertility- the role of Traditional medicine

The traditional use of medicinal plants and foods to treat different diseases including fertility problems is widespread throughout the world. The two most significant factors in restoring fertility are:

- Utilizing an understanding of the Psycho-physiological composition of the individual along with the dietary factors that helps in managing the emotional and chemical factors.
- Mapping traditional foods and herbs that creates a synergic hormonal balance aiding in fertility. Either before or when allopathic treatment does not work, infertile patients tend to seek other methods, such as *Ayurveda*, homeopathy, *Unani* and other traditional methods, or visit holy places and spiritual healers⁸. The use of traditional medicine and medicinal plants has always been a source of efficient natural medicines for people. Herbal medicines are available, have a variety of health benefits and public interest is growing toward their use.

Increased side effects, lack of curative treatment for several chronic diseases, high cost of new drugs, microbial resistance and emerging diseases are some reasons for renewed public interest in complementary and alternative medicines⁹. It has been postulated that by 2010 at least two-thirds of the United States

population will be using one or more of the alternative therapeutic approaches. *Ayurveda*, the Traditional Indian medicine (TIM) and Traditional Chinese medicine (TCM) remain the most ancient yet living traditions. TCM which is based on scientific approaches is widely prevalent. Government of India also has expressed support and encouragement for the TIM. A separate department for Indian Systems of Medicine and Homeopathy (ISM&H) now known as AYUSH (*Ayurveda, Yoga, Unani, Siddha, Homoeopathy*) was established in March 1995 to promote indigenous systems.

Holistic approaches to infertility management, such as Traditional Chinese Medicine (TCM) might address some of the needs of women experiencing infertility, not met in the western medical approach. Traditional Chinese medicine treatment encompasses herbal medicines, acupuncture and lifestyle counselling based on the individual's underlying TCM pattern diagnosis using tools such as pulse, tongue, general physical and emotional wellbeing, and menstrual history. Recent meta-analyses of randomised controlled trials of TCM herbal therapy for female infertility revealed a 2 to 3.5-fold higher likelihood of pregnancy within a 4-month treatment period compared with Western Medical drug therapy. In addition, a meta-analysis of cohort studies involving more than 600 women suggested a mean clinical pregnancy rate of 50 % using Chinese herbal medicine¹⁰. Bridging the gap in knowledge and practice between Western and Eastern medicine are important issues in the fertility field.

TIM has been successful in treating infertility since several thousand years without the help of modern advances in medicine as it gives the ability to the infertile women or couples through treatment to become fertile, to improve the overall health of the women to be able to conceive naturally without the aid of western medicine. Certain food related home remedies are thought to be useful in treating female infertility. *Jamun* leaves (*Eugenia jambolana* or *Syzygium cumini* L.), root of Banyan tree, Winter Cherry are believed to lots of green vegetables, fresh fruits, nuts, seeds, grains, milk, honey, curd, cheese, sprouts, beans, etc. All these things are needed for having a healthy body⁵.

Eating whole foods not only provides fiber that influences hormonal levels but also provides all nutrients for the health of the body. Processed carbohydrates, antibiotic and hormone laden meat and

milk, excess starch, and canned produce destroy fertility. Food such as ghee, milk, nuts, dates, sesame seeds, pumpkin seeds, saffron, honey, and avocados help regulate ovulation and enhance fertilization¹¹. Fresh, organic fruits and vegetables, whole grains, protein from plant sources like beans, and peas, sweet, juicy fruits such as mangoes, peaches, plums, and pears, asparagus, broccoli, spices such as *ajwain* powder, cumin (purifies the uterus in women and the genitourinary tract in men), turmeric (to improve the interaction between hormones and targeted tissues), and black cumin boost fertility. Root vegetables, grains, arugula, watercress, onions, garlic, chives improve circulation and nourish the blood.

It is believed that *urad dhal* which is cooked with equal parts turmeric, coriander, cumin and fennel or banana cooked in ghee, cinnamon and cardamom build *Shukra Dhatu*. Jaggery and Black sesame seeds are both rich in iron and seeds are rich in vitamin E and the phyto-chemicals in the seeds modulate hormones causing changes in the female body. Diet should be free from Trans-fats as they block arteries, threaten fertility and harm the heart and blood vessels and therefore, must be avoided. Foods such as beans, spinach, pumpkin, tomatoes, and beets, boost iron and promote fertility. It is of utmost importance to keep the body well-hydrated by drinking warm water and digestive teas. It is believed that cooking and eating vegetables such as *Colocasia* with old-garlic improve progesterone and fertility chances in women. Meat soup, flesh with fats, *Hing*, spices, boneless fish boiled to make stuffing with spices. Seasoned meat, minced, roasted fried meat; meat cooked with fruits, vegetables, rice, flour, ghee is good for who want to indulge repeatedly for sexual intercourse. Sweet preparation with wheat flour, milk, ghee, *guda* or honey or sugar or with cardamom, pepper, ginger are useful preparations¹¹.

It is vital to include a wide range of foods in the diet to ensure the body is getting all the nutrients it needs to aid conception. Eating small, regular and well balanced meals builds overall health. However, there is paucity of data regarding links between diet, traditional foods, herbs and infertility in India and is relatively new area of research. Therefore, there is a need to conduct studies on exploring the dietary information of these infertile women.

Yoga as a medicine

Researches focus on *yoga* as an ancient Indian philosophy. The use of *yoga* for the purpose of therapeutic intervention began early in the twentieth

century and takes advantage of the various psychophysiological benefits of the component practices and is considered as a natural mind body medicine. The physical exercises (*asanas*) may increase patient's physical flexibility coordination, and strength, while the breathing practices and meditation may calm and focus the mind to develop greater awareness and diminish anxiety¹², resulting in higher quality of life. Other beneficial effects might involve a reduction of distress, blood pressure, and improvements in resilience, mood, and metabolic regulation¹³.

Role of *Yoga* in fertility

Yoga boosts functioning of reproductive system. There are certain *yoga asanas* and postures that especially target the reproductive organs and the pelvic area. These *asanas* increase blood circulation and stimulate the energy in these areas. People with infertility problems often report feeling better, stronger, more powerful and confident about their body after *yoga* practice. *Yoga* focuses on improving healthy body¹⁴.

Yoga is an ideal mind body therapy that is indigenous and one that can be effectively applied in the Indian scenario to optimize the psychological milieu of the sub fertile undergoing treatment.

Fertility *yoga* is a type of *yoga* that is designed to assist couples who are having difficulty getting pregnant. *Yoga* for fertility improves both male & female fertility (Table 1) capacity by minimizing stress, which in turn balances the hormones of the body as well as mental health. In *yoga*, forward

Table 1—*Yoga* and fertility enhancement²⁴

Parameters	Description
Enhances fertility in women by increasing energy flow.	<i>Yoga</i> therapy focuses on the energy system present in the body with numerous different <i>chakras</i> and areas. The <i>yoga</i> position increases the second <i>chakra's</i> energy flow which is called as the seat of creation, where the reproductive organs are present.
Enhances fertility in women by increasing blood flow.	The <i>yoga</i> therapy also helps in softening the abdominal region and removes any kind of tension around the area of uterus, ovaries and fallopian tubes. It stretches the abdominal region which increases the blood flow to the reproductive organs.
Enhances fertility in women by controlling stress	Stress is a major cause of infertility and it interferes with the woman's menstrual cycle, thereby, delaying the ovulation. The stress can be released with the regular practice of <i>yoga</i> .

bending may be useful due to association with the lower abdomen & pelvic area, the home of second *chakra*¹⁵. It is also known as primary energy centre and controls the flow of energy from the lower vessel of the lumber spine as well as the sexual organ¹⁶.

Yoga and meditation can help women experiencing the challenges of infertility. The practice of meditation and relaxation can help increase the clarity of the mind, maintain healthy body chemistry, and give patients the patience to undergo the rigors of infertility treatments. When one understands and can attain physical relaxation, one tends to feel better about the body itself, and begins to treat the body with more respect. This understanding can lead to healthier lifestyle habits as well as increased sensitivity regarding symptoms and body processes. This is beneficial to both doctor and patient as the patient can report with more clarity and sense cycles and physical issues more readily.

Yoga exerts its effect on the brain behaviour relationship often considered as the psychophysiological profile of both infertile men and women thereby improving their reproductive functions. Research has shown that *yoga* modulates the hypothalamic pituitary gonadal axis, balances the hormonal profile and reduces the level of stress and improves the overall quality of life. Therefore, *Yoga* exerts its effect on different domains of life (Table 2).

Table 2—Effect of *Yoga* on different domains

Parameters/domains	Studies on <i>Yoga</i> intervention
Stress	(Chandra <i>et al.</i> , 2012) ¹⁷ (Brown & Gerbarg, 2005) ¹⁸ (Chong <i>et al.</i> , 2011) ¹⁹
Depression	(Brown & Gerbarg, 2005) ¹⁸ (Pilkington <i>et al.</i> , 2005) ²⁰ (Uebelacker <i>et al.</i> , 2010) ²¹
Fatigue	(Bower <i>et al.</i> , 2011) ²² (Krisanaprakornkit <i>et al.</i> , 2006) ²³
Anxiety	(Krisanaprakornkit <i>et al.</i> , 2006) ²³ (Field, 2011) ²⁴ (Saeed <i>et al.</i> , 2010) ²⁵
Physical fitness	(Roland <i>et al.</i> , 2011) ²⁶ (Ross & Thomas, 2010) ²⁷
Cardiovascular disorders	(Field, 2011) ²⁴ (Raub, 2002) ²⁸
Menopause	(Cramer <i>et al.</i> , 2012) ²⁹
Cancer	(Bower <i>et al.</i> , 2011) ²² (Cramer <i>et al.</i> , 2012) ²⁹ (Smith & Pukall, 2009) ³⁰ (Lin <i>et al.</i> , 2011) ³¹
Male reproductive health	(Hu <i>et al.</i> , 2013) ³² (Sengupta <i>et al.</i> , 2013) ³³
Pregnancy and Labour Pain	(Kinsler <i>et al.</i> , 2017) ³⁴ (Babbar and Shyken, 2016) ³⁵ (Koyyalamudi <i>et al.</i> , 2016) ³⁶ (Polis <i>et al.</i> , 2015) ³⁷ (Kinsler & Masho, 2015) ³⁸ (Sengupta, 2014) ³⁹

Alterations in brain waves (basically an increase in alpha waves) and decrease in serum cortisol level was observed during *yoga* therapy¹⁷.

Major fertility problems of women like ovulation, PCOS (polycystic ovarian syndrome), endometriosis and fibroids are linked to hormonal problems and poor dietary choices. *Yoga* therapy is inexpensive, natural and also safe. *Yoga* for infertility treatment involves certain specific poses that increases the fertility naturally. *Yoga* has a lot to contribute in combination with modern medicine to the health status of woman kind making puberty and menopause an easier transition.

Practising *yoga* does not only improve the quality of eggs but is excellent for prostrate health and sperm quality and motility. *Yoga* helps to treat mild erectile dysfunction by reducing stress and anxiety. *Yoga* is beneficial since childhood. *Yoga* helps children develop endurance, balance, flexibility and strength. It plays a crucial role throughout puberty which is a period of rapid reproductive growth and sexual maturation in both boys and girls. As men matures, the emphasis of *yoga* shifts to maintenance of health. Due to increased stress and anxiety, erectile dysfunction is common in adults. *Yoga* is beneficial in elderly as well by promoting adequate functioning of cardiovascular health, immune system, endocrine and circulatory systems, releases stress and anxiety. Further controlled trials of *yoga* practice have demonstrated improvements in mood and quality of life for elderly, people caring for patients with dementia, breast cancer survivors, and patients with epilepsy¹⁸.

In India *Yoga* Therapy is under Dept of AYUSH in Ministry of Health and Family Welfare and through its Morarji Desai National Institute of Yoga (www.yogamdnny.nic.in) five Advanced Centers for Yoga have been set up in our country. The Advanced Centre for Yoga Therapy, Education and Research (ACYTER), a collaborative venture between JIPMER and MDNIY is functioning since June 2008 and focusing primarily on the role of *Yoga* in the prevention and management of cardiovascular disorders and diabetes mellitus. Central Council for Research in Yoga and Naturopathy in the Ministry of Health and Family Welfare (www.ccrn.org) funds research studies in *Yoga* and ran a National Programme on Yoga and Naturopathy in 2010-2011. Under the department of AYUSH, Morarji Desai National Institute of Yoga has created advanced

centers for *Yoga* in JIPMER, NIMHANS, AIIMS and DIPAS to promote all aspects of *Yoga* in these premier medical institutions of India.

Conclusion

The art and science of *Yoga* provide answers to most health problems troubling modern humankind. The therapeutic potential of *yoga* has been recognized world over and studies have shown its beneficial effects in numerous psychosomatic disorders like diabetes, hypertension, asthma, arthritis and other chronic diseases that are a great burden on our healthcare delivery system. In today's world the worst challenges faced by couples is Infertility. *Yoga* can help people cope with the challenges of infertility. Simple postural, breathing, relaxation and meditation practices would lead to enhancement of fertility. The practices include specific postures, *mantras* and breathing techniques. These exercises enhance fertility by stimulating hormone levels and improving blood and nutrients supply to reproductive organs like ovaries, eggs, tubes, uterus, testes and prostate. In doing this they maximize the vitality of these organs. Regular *Yoga* practice helps release stress and most importantly *yoga* can help regain sexual stamina. Thus, *Yoga* can be an effective approach for many couples to let their dreams come true along with balance diet with special reference to traditional ones.

References

- 1 Kamel RM, Management of the infertile couple: an evidence-based protocol, *Reprod Biol Endocrinol RBE*, 8 (2010) 21.
- 2 Chachamovich JR, Chachamovich E, Ezer H, Fleck MP, *et al.*, Investigating quality of life and health-related quality of life in infertility: a systematic review, *J Psychosom Obstet Gynaecol*, 31 (2010) 101–110.
- 3 Cui W, Mother or nothing: the agony of infertility, *Bull World Health Organ*, 88 (2010) 881–882.
- 4 Rutstein SO & Shah IH, WHO | Infecundity, infertility, and childlessness in developing countries. Demographic and Health Surveys (DHS) Comparative reports No. 9, 2004. http://www.who.int/reproductivehealth/publications/infertility/DHS_9/en/ (accessed April 8, 2017)
- 5 Chavarro JE, Rich-Edwards JW, Rosner BA & Willett WC, A prospective study of dietary carbohydrate quantity and quality in relation to risk of ovulatory infertility, *Eur J Clin Nutr*, 63 (2009) 78–86.
- 6 Urman B & Oktem O, Food and drug supplements to improve fertility outcomes, *Semin Reprod Med*, 32 (2014) 245–252.
- 7 Kochhar KP, Dietary spices in health and diseases, *Indian J Physiol Pharmacol*, 52 (2008) 106–122.
- 8 Chhabra S, Srujana D & Annapurna MA, Health Seeking Practices of Infertile Women, *Open Reprod Sci J*, 4 (2012) 10-13.

- 9 Subhose V, Srinivas P & Narayana A, Basic principles of pharmaceutical science in Ayurvēda, *Bull Indian Inst Hist Med Hyderabad*, 35 (2005) 83–92.
- 10 Ried K & Stuart K, Efficacy of Traditional Chinese Herbal Medicine in the management of female infertility: a systematic review, *Complement Ther Med*, 19 (2011) 319–331.
- 11 Motilal R, Rashmi M & Kumar SA, Approach to infertility in ayurveda, *Int Ayurvedic Med J*, 1 (5) (2013) 1-5.
- 12 Kirkwood G, Rampes H, Tuffrey V, Richardson J, *et al.*, Yoga for anxiety: a systematic review of the research evidence, *Br J Sports Med*, 39 (2005) 884–891.
- 13 Yang K, A review of Yoga programs for four Leading Risk factors of chronic diseases, *Evid-Based Complement Altern Med ECAM*, 4 (2007) 487–491.
- 14 Sengupta P, Environmental and occupational exposure of metals and their role in male reproductive functions, *Drug Chem Toxicol*, 36 (2013) 353–368.
- 15 Myss C, *Anatomy of The Spirit*, (Random House), 2010.
- 16 Nussey S & Whitehead S, *The Gonad*, (BIOS Scientific Publishers), 2001.
- 17 Chandra AK, Goswami H & Sengupta P, Dietary calcium induced cytological and biochemical changes in thyroid, *Environ Toxicol Pharmacol*, 34 (2012) 454–465.
- 18 Brown RP & Gerbarg PL, *Sudarshan Kriya* yogic breathing in the treatment of stress, anxiety, and depression: part I-neurophysiologic model, *J Altern Comple Med NYN*, 11 (2005) 189–201.
- 19 Chong CSM, Tsunaka M, Tsang HWH & Chan EP, Effects of yoga on stress management in healthy adults: A systematic review, *Altern Ther Health Med*, 17 (2011) 32–38.
- 20 Pilkington K, Kirkwood G, Rampes H & Richardson J, Yoga for depression: the research evidence, *J Affect Disord*, 89 (2005) 13–24.
- 21 Uebelacker LA, Epstein-Lubow G, Gaudiano BA, Tremont G, *et al.*, Hatha yoga for depression: critical review of the evidence for efficacy, plausible mechanisms of action, and directions for future research, *J Psychiatr Pract*, 16 (2010) 22–33.
- 22 Bower JE, Garet D & Sternlieb B, Yoga for persistent fatigue in breast cancer survivors: results of a pilot study, *Evid-Based Comple Altern Med ECAM*, 2011 (2011) 623168.
- 23 Krisanaprakornkit T, Krisanaprakornkit W, Piyavhatkul N & Laopaiboon M, Meditation therapy for anxiety disorders, *Cochrane Database Syst Rev*, (2006) CD004998.
- 24 Field T, Yoga clinical research review, *Comple Ther Clin Pract*, 17 (2011) 1–8.
- 25 Saeed SA, Antonacci DJ, Bloch RM & Bloch, Exercise, yoga, and meditation for depressive and anxiety disorders, *Am Fam Physician*, 81 (2010) 981-986.
- 26 Roland KP, Jakobi JM & Jones GR, Does yoga engender fitness in older adults? A critical review, *J Aging Phys Act*, 19 (2011) 62–79.
- 27 Ross A & Thomas S, The health benefits of yoga and exercise: a review of comparison studies, *J Altern Comple Med NYN*, 16 (2010) 3–12.
- 28 Raub JA, Psychophysiologic effects of Hatha Yoga on musculoskeletal and cardiopulmonary function: a literature review, *J Altern Comple Med NYN*, 8 (2002) 797–812.
- 29 Cramer H, Lauche R, Langhorst J & Dobos G, Effectiveness of yoga for menopausal symptoms: a systematic review and meta-analysis of randomized controlled trials, *Evid-Based Comple Altern Med ECAM*, 2012 (2012) 863905.
- 30 Smith KB & Pukall CF, *An Evidence-Based Review of Yoga as a Complementary Intervention for Patients with Cancer*, Centre for Reviews and Dissemination (UK), 2009.
- 31 Lin K-Y, Hu Y-T, Chang K-J, Lin H-F & Tsauo J-Y, Effects of yoga on psychological health, quality of life, and physical health of patients with cancer: a meta-analysis, *Evid-Based Comple Altern Med ECAM*, 2011 (2011) 659876.