Qigong and Hypertension

A Critique of Research

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ABSTRACT

Research studies have pointed to various health-related positive effects of Qigong; however, problems in much of the current Qigong research methodology have limited interpretation of the potential benefits of Qigong. Examples of research on qigong and hypertension are used to bring to light some of these methodological issues. In a review of 30 representative studies, various areas of concern are addressed, including: the sources of studies, lack of random assignment, selection biases, treatment effects, placebo response issues, expectancy biases, blinded outcome assessment, adherence to treatment, reliability of blood pressure measurements, regression to the mean, publication biases, and lack of consistency of measurement.

One of the longest term studies, conducted by Kuang et al. (1991) and updated by Wang et al. (1993) is examined in greater detail to illustrate these issues. This study took place over 20 years and reported significant differences between a group practicing qigong and a control group in a variety of measures including a reduction of total mortality rate. The weight of evidence suggests that practicing Qigong may have a positive effect on hypertension. Whether Qigong alone can affect hypertension is not necessarily the most important question. Further research will be required to better assess and understand the effect of adding Qigong into an integrated, multifaceted program that selectively incorporates diet, moderate aerobic exercise, relaxation training, and social and psychological dimensions

INTRODUCTION

We are in the midst of a revolution in healthcare where age-old healing methods from other cultures are now being integrated into the Westem healthcare system (Eisenberg et al., 1998; Ornish, 1990; Zinn, 1990). Among the methods being researched is Qigong, a practice that has existed for several thousand years and that invokes awareness, intention, breath, posture, movement, touch, and sound to cultivate Qi, understood as the vital energy of life.

The purpose of this article is to first briefly review selected research on hypertension and the practice of Qigong to evaluate Qigong's potential efficacy as a treatment for hypertension. Second, methodological issues are discussed to guide future researchers in the field. Hypertension affects 20% or more of the adult population in Western societies and is a significant risk factor for stroke, myocardial infarction, and congestive heart failure. Together these account for more than 50% of deaths in the United States (Wollam et al., 1988).

Problems in much of the current qigong research methodology have limited interpretation of the potential benefits of qigong.

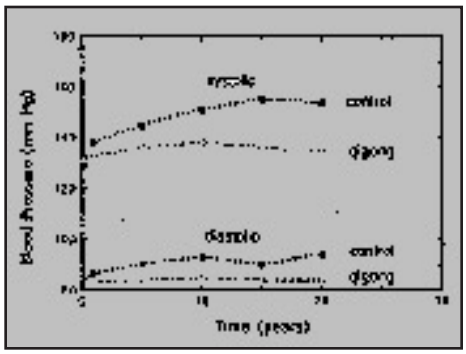
To survey the field, the Qigong Institute of San Francisco's computer database was searched. Seventy studies on hypertension were reviewed that came mostly from conference proceedings (Sancier, 1997). Other reviewed sources include various journal articles (Shih et al., 1998; Kuang et al., 1991; Wang et al., 1995; Sukuki et al., 1993), books (Cai, 1986; Chia, 1990; Chuen, 1991; McGee and Chow, 1994; Cohen, 1997), write-ups from qigong institutes (Xu and Wang, 1993), journals (Kuang et al., 1991; Wang et al., 1995) and reports from peer-reviewed journals (Sancier, 1996a, 1996b)

Thirty representative studies were selected for review. All of these sources (except Zhang et al., 1993) report that in hypertensive patients, the practice of qigong positively affects BP, other blood flow measures, cardiovascular outcome measures, and other aspects of health. Elevated blood pressure (BP), is defined as systolic BP of 140 mm Hg or greater, or diastolic BP of 90 mm. Hg or greater.

REVIEW OF LITERATURE ON QIGONG AND HYPERTENSION BLOOD PRESSURE

Many studies suggest that Qigong lowers BP. The most in-depth of these studies is the Kuang study (1991) updated by Wang (1994), which took place over 20 years. The basic design involved 204 patients with hypertension, randomly assigned to Qigong practice and control groups. Age of subjects was not mentioned. Both groups were given antihypertensive drugs. The Qigong group of 104 patients practiced 30 minutes twice a day over 20 years.

During the first two months, the BP of all patients dropped in response to the hypotensive drug. Over the period of 20 years, the BP of the group practicing Qigong stabilized while that of the control group increased (p 0.01). Due to the stabilized BP, 48% in the Qigong practice group reduced the hypotensive dosage, and for 30% in this group, BP medicine was eliminated. In contrast, 31% of the control group



increases the hypotensive dosage (Kuang et al., 1991). An update of the Kuang study by Wang et al., (1995), reported significant differences in subjects who reportedly practiced Qigong for 30 years, 30 minutes twice a day. The accumulated mortality rate was 25- 41% in the Qigong group and 40.8% in the control group. The incidence of strokes was significantly different in the Qigong practice groups as compared to the control group, 20.5% and 40.7%, respectively. The

death rate due to strokes was 15.6% and 32.5%, respectively (p 0.01) (Wang et al., 1993, from Sancier, 1996).

We do not know whether the improved health of the Qigong practice group was a function of Qigong exercises, or another phenomenon associated with Qigong practice, such as physical exercise. In most studies (Huang, 1990; Kuang, 1991) there is not sufficient information to determine whether measurements took place shortly after Qigong practice, and whether improvement in BP or other blood flow measurements were lasting effects of igong or a temporary result of movement and exercise. Both Wang (1990) and Chai (1990) view physical exercise as a possible explanation for improvement in blood volume and blood flow, respectively. Other studies state that BP reductions and other blood flow measures were maintained between 2 months and 3 years (Uing, 1998) and 1 and 3 years (Li and Zhang, 1988) of practice. However, reports do not mention how long after Qigong practice measures were taken.

In future research, it may be useful to add a control group that exercises but does not practice Qigong. If the exercise group had fewer positive health results, it may be a significant step in ruling out exercise as a confounding variable. Also, the time frame between Qigong practice and taking physiologic measurements should be clearly stated to determine how long positive results actually last.

Finally, in terms of alternative explanations for results, even in controlled studies, the validity of Qigong could be better determined by giving both groups a questionnaire addressing diet, exercise, occupation, possible differences in setting between the Qigong and the control group and adherence to treatment (medication vs. practicing Qigong) or other significant variables.

RESEARCH CRITIQUE: METHODOLOGICAL ISSUES

Inadequate research design makes the scientific validity of these studies difficult to determine. The Kuang study (Kuang et al., 1991) has been selected as an example since it is one of the longest Qigong studies and its methodology has been clearly described. In behavioral research with humans, unlike drug research, it is difficult to have a double-blind study, because the subjects usually know the group to which they belong, and the therapist knows which group is receiving treatment. With Qigong research, Qigong practitioners are aware that they are practicing a specific healing technique, and the Qigong teacher/therapist knows that the Qigong students are being treated. Thus, results of many of the studies could be based on placebo response rather than Qigong per se. A placebo response is a type of expectancy bias based on the belief of the patient, the belief of the therapist and the interaction between the two. It was not reported in the Kuang study (Kuang et al., 1991) nor in other studies reviewed whether data collectors were blinded to group assignment, that is, if they knew which group was actually receiving treatment. If they were aware, collection of data could be skewed in favor of the collectors bias.

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The dose response effect is another issue that should be considered because a greater dose of the experimental variable increases positive outcome. If we knew that people who practiced Qigong for longer periods of time, or were more skilled, had increased health, this could increase our confidence in the effects of Qigong. In the Kuang study (1991), how many of the Qigong group actually practiced 30 minutes per day, twice a day? The original research by Kuang did not specifically report how long the Qigong practitioners practiced. How was adherence to the practice regimen assured? Most of the studies did not mention how many subjects actually adhered to the practice regimen; therefore it cannot be determined if there was a dose response effect. If we knew this then it would be more likely that the Qigong practice contributed to the treatment effects, rather than expectancy effects from being involved in a Qigong group

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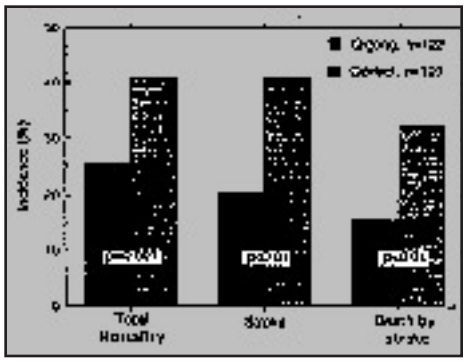
There are general difficulties in establishing reliable BP measurements in terms of establishing a stable baseline for any researcher. A subject's BP may fluctuate for a variety of reasons at different times, making analysis difficult. Many studies in our review do not adequately address this problem, although some studies have given attention to establishing stable baseline BP measures, and monitoring BP continuously over the course of the study (eg, Shih, 1998). However, even in this study, it was not reported whether such measures were taken at times other than directly after the Qigong meditation period. Such measures would help to determine whether meditative exercise itself is, a confounding variable (ie, whether Qigong versus control groups temporarily reduces BP after exercise) or if Qigong produces longer lasting effects.

Studies that select subjects by extremely high or low levels of any variable have the methodological problem of follow-up measures having a general tendency to move



toward the center. In the Wang study cited earlier, comparisons were made between 80 aged hypertensive patients who were divided into three groups: those having hypertension and heart energy deficiency (HED), another without heart energy deficiency and a group having normal BP readings. The first group who were the least

healthy, showed the greatest improvement (10 indices) with Qigong practice. However, the nonrandom division into groups of greater and lesser heart deficiency at the outset allows for regression to the mean to explain the positive results.

Further research needs to be conducted on the varied Qigong traditions to determine which particular type or sequence of Qigong movements may be the most beneficial to a patient at a given time. In any sample of Qigong traditions, (Cohen, 1997) each may focus upon various combinations or types of Qigong: healing internal organs, stretching muscles, dispersing stagnant chi, tapping, breathing, making sounds, using pulsing movements, using Qigong animal-like movements, self massaging, and spiritual awareness exercises. Qigong also uses nonmovement techniques such as standing meditation to activate qi (Cai, 1986; Chuen, 1991; Diepersloot, 1995; Ha, 1996; Mayer, 1997).

Another difficulty is that Qigong practices are not so easily oriented toward Western notions of prescribing a single pill or movement. Such an approach provides ease of scientific measurement, but does not fit into the "holistic" Chinese medical philosophy that includes unique combinations of herbs, acupuncture and a wide variety of Qigong movements suited to the individual whole person.

GENERAL DISCUSSION

Although many of the studies of Qigong practice and hypertension are flawed, controlling for the methodological biases listed above represents high expectations in any behavioral or clinical research. The methodological problems addressed above may account for some unknown portion of improved health outcome measures, but we should be circumspect before fully discounting positive effects reported in mortality rates, incidence of strokes and retinopathy (Kuang et al., 1991), and other positive outcome measurements in patients who have suffered from long term hypertension (eg, Jing, 1988; Wu, 1993), or chronic renal failure (Suzuki, 1993).

In general, Western hypertension research (COTA, 1978; Cohen, 1997:345), as well as Chinese Qigong studies, suffer from problematic research design. In an overview of hypertension studies, Rosen states, "methodological problems, such as small sample sizes and lack of experimenter-blind assessment, have limited the generalizability of results from most studies" (Rosen et al., in Gatchel, 1998; Kaufmann et al., 1988; TOHP Collaborative Research Group, 1992).

We hope that Western researchers join hands with those in China who are investigating Qigong,

CONCLUSION

Taken as a whole, many studies on hypertension do not address the criteria outlined above for reasons as varied as difficulties inherent in behavioral research itself, lack of adequate training in research methodology, lack of funding and the orientation of the clinician to heal rather than to measure. However, the treatment effects of Qigong on hypertension are worthy of note and are potentially profound in their implications.

Qigong fits well into the guidelines stated by the National Institutes of Health Panel that concluded that: "integrating behavioral and relaxation therapies with conventional medical treatment is essential for successfully managing these conditions". While the panel did not endorse a single technique, it stated that a variety of them worked in "lowering one's breathing rate, heart rate and BP" as long as they included two features: "a repetitive focus of a word, sound, prayer, phrase or muscular activity, and neither fighting with nor focusing on intruding thoughts or emotioins". Further research could compare Yoga, Qigong, and other relaxation and/or meditative traditions.

Each different Eastern meditation modality may have its own advantages and disadvantages for different patients. For example, Yoga may be the most appropriate exercise for patients who cannot stand, while Qigong may be more beneficial for type A, sedentary office workers who would benefit from movement. For those who would most benefit from mantra yoga, TM may prove appropriate, while those who are overly intellectual and stressed may benefit from the bodily orientation of Qigong. Qigong has the advantage for elderly hypertensives of being low impact, and therefore potentially less dangerous compared to traditional aerobic exercise (Province, 1995).

Finally, whether Qigong alone can affect hypertension is not necessarily the most important question to be answered. A system that integrates diet, aerobic exercise, relaxation techniques, social, hypnotherapeutic, and psychological dimensions may be most effective in treating hypertension. Qigong appears to help in the treatment of hypertension, but due to inadequate addressing of methodology issues it is difficult to determine just how effective Qigong is, and what other factors may contribute to its positive effects.

We hope that Western researchers join hands with those in China who are investigating Qigong, because the world may benefit from further studies to establish whether or not Qigong may provide a beneficial adjunct to other treatments.

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"Tao abides in non-action, Yet nothing is left undone."
Chapter, 37 Tao Te Ching, Lao Tzu