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## Integrative Medicine Research

journal homepage: [www.imr-journal.com](http://www.imr-journal.com)

Letter to Editor

## Exploring the effects of expert-led qigong and self-practice qigong on blood pressure



Ji-Eun Park <sup>1</sup>, Chang-Sop Yang <sup>1</sup>, So-Young Jung, Ae-Ran Kim, Minhee Lee, Sun-Mi Choi \*

Korea Institute of Oriental Medicine, Daejeon, Republic of Korea

## ARTICLE INFO

## Article history:

Received 21 October 2019

Available online 12 November 2019

Hypertension can cause various secondary diseases, including cardiovascular disease and renal failure.<sup>1</sup> In 2016, the prevalence of hypertension was over 30 % among people older than 30 years, and 65 % among people older than 65 years in South Korea.<sup>2</sup> Although a systematic review reported the effect of qigong on hypertension,<sup>3</sup> a study by Park et al. investigating the effect of qigong on prehypertension and hypertension reported no significant effect in lowering blood pressure.<sup>4</sup> In addition to low research quality, several studies have pointed to low compliance among participants as the reason for finding no evidence of an effect of various types of interventions including qigong on diseases.<sup>4,5</sup> The compliance with qigong could be higher in group sessions with the guidance of an expert than self-practice at home without an expert. The aim of this pilot study was to investigate the effect of qigong through comparing expert-led qigong with self-practice qigong.

Total eight participants aged 39–65 years, with systolic blood pressure (SBP) 120–159 mmHg or diastolic blood pressure (DBP) 80–99 mmHg, attended 4-week expert-led qigong sessions three times a week and subsequently practiced 20 weeks of self-practice qigong at home five times a week. As outcomes, blood pressure was measured using a sphygmomanometer, and the average of the three blood pressure measurements was recorded. Quality of life (EuroQol-5D (EQ5D), Measure Yourself Medical Outcome Profile (MYMOP)), lipid profile (high-density lipoprotein (HDL), low-density lipoprotein (LDL), triglyceride), and body mass index (BMI) were also assessed. To compare the change of outcomes among baseline, 4 weeks after expert-led qigong, 24 weeks after self-practice qigong, the Friedman test was used. The statistical

**Table 1**

Change in blood pressure, quality of life, lipid profile, and body fat: at baseline, 4 weeks, and 24 weeks.

	Baseline	4 weeks	24 weeks
SBP	132.0 (126.5, 139.2)	132.3 (128.2, 135.5)	135.3 (131.0, 140.3)
DBP*	87.0 (84.2, 89.7)	82.3 (80.0, 82.7) <sup>†</sup>	85.3 (82.7, 89.3) <sup>‡</sup>
EQ5D	1 (0.94, 1.0)	1 (0.91, 1.0)	1 (0.91, 1.0)
MYMOP	2.67 (2.0, 2.67)	1.67 (1.0, 2.3)	1.83 (1.25, 2.25)
Chol	214.0 (184.0, 243.8)		209.0 (182.0, 221.0)
HDL	59.9 (40.6, 67.4)		44.7 (43.8, 51.5)
LDL	135.8 (123.6, 169.8)		134.7 (121.1, 154.1)
TG	114.0 (69.3, 150.0)		91.0 (71.0, 107.0)
BF%	34.5 (26.0, 36.6)		35.7 (26.4, 36.9)

Note: values are expressed as Median (Q1, Q3). \*, P = 0.002, among baseline, 4 weeks, and 24 weeks. <sup>†</sup> P < 0.005, compared with baseline; <sup>‡</sup> P < 0.05 compared with 4 weeks. BF%, body fat percentage; BMI, body mass index; DBP, diastolic blood pressure; Chol, Cholesterol; EQ5D, Euroqol-5D; HDL, high-density lipoprotein; LDL, low-density lipoprotein; MYMOP, Measure Yourself Medical Outcome Profile; SBP, systolic blood pressure; TG, Triglyceride.

analysis was performed using R software version 3.5.1 (The R Project for Statistical Computing, Vienna, Austria).

Two males and six females participated in this study, and one participant dropped out because he did not attend the minimum number of qigong group sessions. The overall compliance during the expert-led qigong and self-practice qigong were 93.8 % and 77.1 %, respectively. Changes in SBP showed no significant differences among measurements at baseline, 4 weeks, and 24 weeks (p = 0.56). SBP decreased from 132.0 mmHg (median) at baseline to 132.3 mmHg (p = 0.97) after 4 weeks of expert-led qigong, and increased again to 135.3 mmHg (p = 0.58) after 20 weeks of self-practice qigong. DBP showed similar trend. Although DBP was significantly decreased after 4 weeks of expert-led qigong from 87 mmHg to 82.3 mmHg (p = 0.005), DBP significantly increased again to 85.3 mmHg after self-practice qigong (p = 0.03) (Table 1). Quality of life measured with either the EQ5D or MYMOP showed

\* Corresponding author at: Korea Institute of Oriental Medicine, 1672 Yuseong-daero, Yuseong-gu, Daejeon, 34054, Republic of Korea.

E-mail address: [smchoi@kiom.re.kr](mailto:smchoi@kiom.re.kr) (S.-M. Choi).

<sup>1</sup> Both authors contributed equally to this work.

no significant changes ( $p=0.90$  for the EQ5D,  $p=0.37$  for the MYMOP). Median levels of total cholesterol ( $p=0.23$ ), LDL ( $p=0.71$ ), and triglyceride ( $p=0.41$ ) were not significantly different between baseline and 24 weeks, and HDL showed a marginally significant change ( $p=0.06$ ). The changes in BMI and body fat percentage were not significant.

The 2017 Guideline for High Blood Pressure in Adults by the American College of Cardiology/American Heart Association suggested that non-pharmacologic interventions can reduce SBP by 4–5 mmHg and DBP by 2–4 mmHg.<sup>6</sup> Since 4 weeks of expert-led qigong showed a significant reduction in DBP, the results of this study indicate that a qigong exercise program can be a safe and effective intervention in patients with prehypertension and stage I hypertension. However, participants showed no decrease in SBP or DBP after 20 weeks of self-practice qigong, even though self-practice qigong consisted of the same qigong exercises and the frequency as expert-led qigong and carried out for a longer period. This result may indicate the importance of expert guided programs for effective qigong exercise interventions. Therefore, an expert-led qigong program is recommended for blood pressure management.

### Acknowledgments

We thank Analisa Avila, ELS, of Edanz Group ([www.edanzediting.com/ac](http://www.edanzediting.com/ac)) for editing a draft of this manuscript.

### Author contribution

MHL, and SMC conceptualized this study. JEP, SYJ, ARK conducted this study. JEP, and CSY drafted the manuscript. SYJ, ARK, MHL, SMC critically commented on the manuscript and contributed to the revision. All authors approved the final version of this manuscript.

### Conflict of interest

The authors declare that they have no competing interests.

### Funding

This research was funded by the Korea Institute of Oriental Medicine (K13203).

### Ethical statement

This study was approved by the Oriental Medical Center of Daejeon University of the Republic of Korea (DJOMC-105) and is registered in the Clinical Research Information Service (KCT0000921).

### Data availability

Data will be available upon request.

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