

## **Development and Evaluation of a Self-Healing Nursing Model Using Buddhist Meditation to Treat Hypertension**

*Jamjuree Saeloo, Urai Hatthakit, Kittikorn Nilmanat*

**Abstract :** This three-phase action research study was conducted for the purpose of developing and evaluating a self-healing nursing model using Buddhist meditation to treat hypertension. The research was conducted in southern Thailand and involved collaboration among the primary investigator, Thais with hypertension, public health nurses, a Buddhist monk and village healthcare volunteers. Qualitative data were collected through in-depth interviews, observations, critical reflection and field note recordings. Quantitative data were obtained via a stress questionnaire, a mindfulness questionnaire and digital blood pressure monitoring. Data were analyzed via content analysis and descriptive statistics.

The results lead to creation of a self-healing nursing model that consisted of three major actions: creating self-awareness and enhancing knowledge; promoting peacefulness and wisdom; and, maintaining peacefulness and wisdom. Creating self-awareness and enhancing knowledge involved: providing information about hypertension and factors that influence blood pressure; promoting the value of Buddhist meditation; and, establishing collaborative relationships. Promoting peacefulness and wisdom involved: teaching the essence and principles of Buddhist meditation; advising use of self-preparation prior to Buddhist meditation; facilitating understanding about prayer and Buddhist meditation; providing a book and VCD on Buddhist meditation; encouraging use of a relaxed atmosphere during Buddhist meditation; enhancing confidence in the ability to practice Buddhist meditation; encouraging daily prayer and practice of Buddhist meditation at home or in the temple for 30 consecutive minutes; complementing progress made in Buddhist meditation; and, doing weekly home follow-up visits after completion of 1-2 meditation training sessions. Maintaining peacefulness and wisdom involved: doing monthly home follow up visits; encouraging continual engagement in Buddhist meditation; encouraging family members to support hypertensive persons in use of Buddhist meditation; organizing venues for the practice of Buddhist meditation; and, serving as a role model in Buddhist meditation.

Implementation of the model revealed 9 of the 12 hypertensive persons involved, in the final phase of the study, were able to integrate Buddhist meditation into their daily lives and, thus, enhanced their self-healing. They demonstrated: positive feelings about knowledge enhancement, regarding hypertension, and engagement in Buddhist meditation; an increase in mindfulness; a decrease in stress; and, an ability to maintain their blood pressures below 140/90 mmHg.

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## **Background**

Hypertension, a worldwide health problem, especially in developing countries, occurs when an individual has a persistent elevated arterial blood pressure (systolic blood pressure 140 mmHg and diastolic blood pressure 90 mmHg).<sup>1, 2, 3</sup> In 2000, more than one-fourth (972 million) of all adults, worldwide, were believed to be hypertensive, with almost 639 million living in developing countries.<sup>4</sup> In addition, it has been estimated that almost one-third (1.56 billion) of the world's population will be hypertensive by 2025.<sup>4</sup> However, only one-sixth (11.5 million) of the population of Thailand, in 2008–09, were assessed as having hypertension.<sup>5</sup> Hypertension impacts not only the economic and social development of the world, but every aspect of the life among those who are hypertensive.

Hypertension is often referred to as a “silent killer” since individuals who have the illness may not know it, as they have not encountered warning symptoms, until they suffer a stroke or are on the verge of death.<sup>1, 2</sup> Prolonged high blood pressure increases the accumulation of atherosclerotic plaque in one's arterial walls and damages blood vessels throughout the body, particularly those in the heart, brain and kidneys, leading to chronic heart disease, stroke and/or renal failure.<sup>1, 2, 6</sup> It is known that the higher one's blood pressure, the greater the complications, with an increased possibility of mortality.<sup>3</sup> Thus, it truly is in the best interest of everyone to maintain blood pressure readings < 140/90 mmHg so as to decrease the risk of life-threatening complications.<sup>3, 7</sup> However, it was estimated that less than 3 million Thais, in 2008–2009, were maintaining their blood pressure readings < 140/90 mmHg.<sup>5</sup> Thais' failure to control their blood pressures may be due to their: level of stress; lack of compliance with recommendations to change their health behaviors; and/or, refusal to adhere to prescribed therapies and medication regimens.<sup>7, 8</sup>

In addition to addressing the biological aspects of blood pressure control, it is necessary to take into account the psycho-social-spiritual aspects of being human.<sup>9, 10</sup> In other words, the interactions among all dimensions of humanness, especially the physical body and mind.<sup>11</sup> A number of Eastern methods have been used for balancing the dimensions of one's humanness.<sup>12</sup> One such method is Buddhist meditation, which has been shown to be effective in treating mild to moderate hypertension.<sup>13</sup>

Engaging in Buddhist meditation cultivates concentration and positive mindfulness that can facilitate a decrease in the sense of suffering and an increase in a sense of calm. Positive mindfulness appears to stimulate the parasympathetic nervous system, which, in turn, leads to a decreased heart rate, dilation of the peripheral blood vessels and improved blood flow.<sup>14</sup> These factors, subsequently, contribute to reduction in one's blood pressure.<sup>15, 16</sup> Prior research has found that meditation decreases systolic and diastolic blood pressure,<sup>17, 18, 19, 20, 21</sup> heart rate,<sup>19, 20</sup> stress<sup>17, 18</sup> and the use of antihypertensive medications.<sup>21</sup>

Although nurses, especially in Eastern cultures, may be aware of the benefits of integrating meditation into a patient's nursing care, few use it because they lack the necessary knowledge and skills.<sup>22</sup> In addition, prior studies, regarding the use of meditation in the control of hypertension, predominantly have used randomized controlled trials and quasi-experimental designs that have shown a positive effect on the reduction of hypertension.<sup>19, 20, 21</sup> However, no studies could be located, in English or Thai nursing journals, that demonstrate how to integrate the use of meditation into a patient's nursing care plan. Thus, the purpose of this research was to develop and evaluate a self-healing nursing model using Buddhist meditation to treat hypertension.

## Conceptual Framework

The framework upon which this research was based was Buddhist doctrine. Buddhism views illness, including hypertension, as an imbalance between the body and mind.<sup>11, 15, 23, 24</sup> This imbalance can lead to suffering (i.e. discomfort or stress) and a decreased sense of peacefulness. Buddhist meditation appears to serve as a catalyst for self-healing by restoring and balancing the interaction between one's mind and body.<sup>25</sup> From a Buddhist perspective, mankind confronts distress at all times because of the 'Three Characteristics of Existence' (*tilakkhana*): impermanence (*anicca*); suffering (*dukkha*); and, no-self (*anatta*).<sup>26</sup> However, humans can decrease or eliminate their suffering or distress by practicing Buddhist meditation. It helps establish cheerfulness (*pramod*), joy (*piti*), pleasure (*sukha*) and concentration (*samadhi*), all which appear to stimulate the parasympathetic nervous system. As previously mentioned, stimulation of the parasympathetic nervous system leads to a decrease in heart rate, dilatation of peripheral blood vessels and improvement in blood flow, which, subsequently, causes a decrease in blood pressure.<sup>15, 16</sup>

## Method

**Design:** Action research was used to guide the development of the self-healing model.<sup>27</sup> This method was selected because it allowed for multiple community participants to be involved in understanding issues surrounding hypertension and improving the control of hypertension, though use of Buddhist meditation, among individuals with hypertension.

**Setting:** The research setting was a community of 8,201 people, in southern Thailand, where hypertension has been ranked as the number one chronic health care problem.<sup>28</sup> According to a health survey, conducted by the community's medical healthcare center, the number of hypertensive persons

increased from 619 cases, in 2008, to 1062 cases, in 2010.<sup>29</sup> In addition, most of the populace being treated for hypertension, by the medical center, had been found to be unable to maintain blood pressure readings <140/90 mmHg.

**Ethical considerations:** Prior to implementation, the study and its procedures were reviewed and approved by the Institutional Review Board (IRB) of the primary investigator's (PI) academic institution, as well as by the leaders of the selected community and temple. Potential participants were informed about: the purpose of the study; voluntary participation; what study involvement entailed; confidentiality and anonymity issues; and, the right to withdraw from the study anytime without repercussions. Verbal consent to participate was obtained from those agreeing to take part in the study.

**Participants:** The participants included: two female public health nurses, who provided healthcare at the local community healthcare center and had experience using meditation in their nursing practice; a Buddhist monk living in the community's temple, who taught Buddhist philosophy and meditation; five female village health care volunteers, from the local community healthcare center, who had completed a training course on meditation and care of patients with hypertension; the PI, who was a public health nurse; and, thirty persons with hypertension who were receiving care at the community healthcare center and met the inclusion criteria. The inclusion criteria included being at least 18 years of age and having: systolic blood pressure readings  $\geq 140$  mmHg; diastolic blood pressure readings  $\geq 90$  mmHg; a physician diagnosis of primary hypertension; and, ability to speak, read and write Thai.

The two public health nurses, 30 individuals with hypertension and the PI were involved during Phase I of the study, while the monk, five village health care volunteers, one public health nurse, the PI and 30 individuals with hypertension participated in Phase II. One public health nurse withdrew during Phase II

because of her heavy workload. During Phase III, only the PI, one village health care volunteer, and 12 of the 30 individuals with hypertension were involved. Eighteen of the hypertensive participants withdrew because they found meditation and involvement in the study to be too difficult and time consuming.

The twelve individuals with hypertension, who took part in Phase III, included 11 females and one male, who were 44 to 75 years of age (mean = 56.91 years). All of them (100%) were Buddhist, nine (75%) were married, two (17%) were widowed and one (8%) was single. Eleven (92%) graduated from primary school, and one (8%) finished secondary school. Nine (75%) of them were agriculturists, two (17%) were housewives and one (8%) was a trader. Although 11 (92%) of the participants reported having adequate incomes to support their needs, five (42%) did not have savings and one (8%) felt her income was inadequate.

**Research procedure and measurements used:**

The three phases of the research process, which lasted a total of 56 weeks, consisted of: Phase I, situational analysis (8 weeks); Phase II, model development and implementation (32 weeks); and Phase III, model evaluation (16 weeks). Each phase is described below in detail, including the measurements used. Approval was obtained to use the English language copyrighted instrument and translate it into Thai.

*Phase I – Situational Analysis:* The first phase, which was 8 weeks in length, involved gathering data on demographics, factors influencing blood pressure and blood pressure measurements, among the participants with hypertension, and the type of hypertensive nursing care administered by the public health nurses at the community healthcare center. The PI collected data on those with hypertension in their homes and on the public health nurses at their respective offices in the local medical center.

Demographic data on the participants with hypertension were obtained via use of a researcher-developed Demographic Data Record (DDR). Each

participant was asked to indicate, on the DDR, his/her: age; gender; marital status; education level; occupation; religion; and, adequacy of income. It took approximately two minutes to complete the DDR.

Assessment of factors that influenced blood pressure (i.e. self-management knowledge, previous self-management experiences, stress levels and level of mindfulness) was carried out by way of two or three tape-recorded interviews, with observations, and the administration of two questionnaires. Each interview and observation session took approximately 45 to 60 minutes to complete. A researcher-developed interview guide, consisting of 13 questions, was used. Examples of questions in the interview guide were: “What is the cause of high blood pressure?”; “How do you care for yourself when you know you have high blood pressure?”; “What are the facilitators and barriers for controlling your blood pressure?”; “Are you ever stressed?”; “If so, what are the causes of your stress?”; and, “How do you care for yourself when you are stressed?” In addition to the interview, field notes of the observations made were recorded and each hypertensive participant’s medical record, at the community healthcare center, was reviewed regarding blood pressure readings, weight, laboratory results, medications and medical appointments. After transcribing each interview, verbatim, from each respective tape-recording, the contents of the chart were reviewed and the PI and the two public health nurses analyzed the data at the public health nurses’ office, so as to gain understanding regarding the hypertensive participants’ difficulties regarding control of their blood pressures.

The two questionnaires used were the Thai Stress Test (TST)<sup>30</sup> and Freiburg Mindfulness Inventory (FMI) Short Form.<sup>31</sup> In addition, blood pressures were measured, by way of the Microlife 3 AG I automatic blood pressure monitor, for the purpose of obtaining a baseline reading, on each hypertensive participant, prior to implementation of Phase II and Phase III of the study.

The TST<sup>30</sup> consisted of 24 questions that assessed one's feelings and thoughts (positive and negative) over the past month. Examples of the questions were: "Do you feel lonely?"; "Do you feel bored and discouraged about doing anything?"; "Do you feel proud about yourself?"; and, "Do you feel pleased about your life?" Possible responses to each item were: "Never" = 0; "Sometimes" = 1; and "Often" = 3. Responses to items assessing negative feelings (items 1-12) and positive feelings (items 13-24) were separately summed, with both having a possible range of 0 to 36. To obtain an index scores, results of the two scores were simultaneously compared to the TST matrix table. The index score obtained, according to the TST matrix table, was used to determine the individual's level of stress (good mental health, normal, mild stress or severe stress). Prior research has shown reliability of the instrument to be 0.84.<sup>30</sup> For this study, reliability of the TST was found to be 0.88.

The FMI<sup>31</sup> consisted of 14-items that assessed mindfulness (non-judgmental present-moment observation and openness to negative experience) regardless of prior meditation experience. Examples of the questions included: "I sense my body, whether eating, cooking, cleaning or talking."; "When I notice an absence of mind, I gently return to the experience of the here and now"; "I accept unpleasant experiences"; and, "In difficult situations, I can pause without immediately reacting." Possible responses to the items were: "Rarely" = 1; "Occasionally" = 2; "Fairly Often" = 3; and, "Almost Always" = 4. To obtain a total score, response values were summed across all items. A high total score indicated the presence of greater mindfulness. Prior research has found the instrument's internal consistency reliability to be 0.86. In this study, the reliability of the FMI was found to be 0.85.

The Microlife 3AG 1 automatic blood pressure monitor, which had a measurement range of 30-280 mmHg, with a reliability of  $\pm 3\%$ , was used to assess

the blood pressures of the hypertensive participants.<sup>32</sup> To assure accuracy, the PI carried out the following procedure each time a blood pressure measurement was conducted: a) having the person sit quietly for at least five minutes prior to the measurement; b) doing the measurement, using the same arm each time, with the person in a sitting position and his/her arm laid at the level of the heart; c) using an appropriately sized blood pressure cuff; and, d) doing two measurements, at least one minute apart, and calculating the mean of the two measurements.<sup>33</sup>

The type of hypertensive nursing care administered by the two public health nurses was explored via individual interviews. Each interview was tape-recorded and lasted approximately one hour. A PI-developed interview guide was used, during each interview, and included questions such as: "What are policies you use for caring for persons with hypertension?"; "What are the results of your nursing care?"; "Have you ever used meditation as part of your nursing care?"; "If so, why did you use meditation?"; "Since you use meditation as part of your nursing practice, how do you go about using it?"; "What are the facilitators and barriers of your use of meditation as part of your nursing care?"; and "What are the results of your use of meditation?"

*Phase II - Model Development and Implementation:* Phase II, which was 32 weeks in length, involved formulation and implementation of a model that included all study participants. The PI developed a tentative model based on information obtained during Phase I of the study and by reviewing Buddhist philosophy and meditation, and the concept of self-healing. In preparation for development of the model, the PI also reviewed the current Buddhist meditation practices that took place in the local community used as a study site. In addition, she interviewed two local monks, who were experts in Buddhist meditation, and took courses in moving meditation and Vipassana meditation. After the tentative model was developed, the PI met, at the local

temple, with the public health nurse, monk and five village healthcare volunteers. At that time she presented a summary of the analysis of the data gathered during Phase I and reviewed the tentative model. Next, the PI met, in a meeting room at the community pavilion, with the 30 individuals with hypertension regarding the tentative model. The purpose of both of these meetings was to improve the tentative model in terms of administration, effectiveness and outcomes, as well as each participant's role responsibilities. The two meetings were lead by the PI, using a group discussion guideline, that consisted of questions such as: "What activities should be included in the model?"; "What is the appropriate time for individuals with hypertension to learn Buddhist meditation?"; and, "What role do the nurse, monk, village healthcare volunteers and individuals with hypertension play to facilitate the practice of Buddhist meditation?" After meeting with all of the study participants, the PI made adjustments in the tentative model, including the: location, time frame and activities involved in Buddhist meditation training; and, role responsibilities of each participant.

After the tentative model was revised, it was presented to all of participants to assure its accuracy. There was agreement among everyone that the revisions made in the tentative model were accurate. To confirm the viability of the revised tentative model, it was implemented, for two months, using three hypertensive individuals who were not part of the study. The results of the model implementation suggested the three hypertensive individuals had difficulty understanding the: relationship between stress and blood pressure, and essence of Buddhist meditation. As a result, the PI again made revisions in the tentative model that included each participant's responsibilities. The outcome was the final model, "*Self-Healing Nursing Model Using Buddhist Meditation to Treat Hypertension*," as shown in **Figure 1**.

As noted in Figure 1, the model consisted of three major self-healing actions: creating self-awareness and enhancing knowledge; promoting peacefulness

and wisdom; and, maintaining peacefulness and wisdom. Creating self-awareness and enhancing knowledge, the first major self-healing action, lasted for four weeks and was carried out, by the public health nurses and the PI, in the home of each hypertensive participant, and involved: providing verbal and written information about hypertension (disease pathology; hypertension management; causes of hypertension; relationship between stress and high blood pressure; and, importance of balancing one's physical and mental state to regulate blood pressure); providing information about factors (stress and mindfulness) that influence blood pressure; promoting the value of using Buddhist meditation to control blood pressure; and, establishing a collaborative relationship with the hypertensive participants (calling them and their family members by name, smiling, using a soft voice and appropriately touching them). When the hypertensive participants failed to understand the information they were given, the information was presented again in simpler terms.

The second major self-health actions, promoting peacefulness and wisdom, lasted 20 weeks and focused on teaching the hypertensive participants the essence (the Three Characteristics of Existence) and principles of Buddhist meditation. This action was carried out, by the monk, via group training, for three hours one day, each week, for four weeks. During the first week of instruction, Anapanasati meditation (concentrating on breathing in and out) was performed, while during weeks two and three moving meditation (concentrating on breathing in and out, as well as on body movements) was practiced. Finally, during week four, Vipassana meditation (observing the nature of feelings and perceptions that arise, endure and cease) was conducted. Anapanasati and moving meditation are believed to help in the development of concentration, so as to gain calmness and tranquility, while Vipassana meditation is believed to assist in the development of wisdom and a clearer understanding of the nature of life.<sup>26</sup> Each of these three forms of Buddhist meditation are guided by the

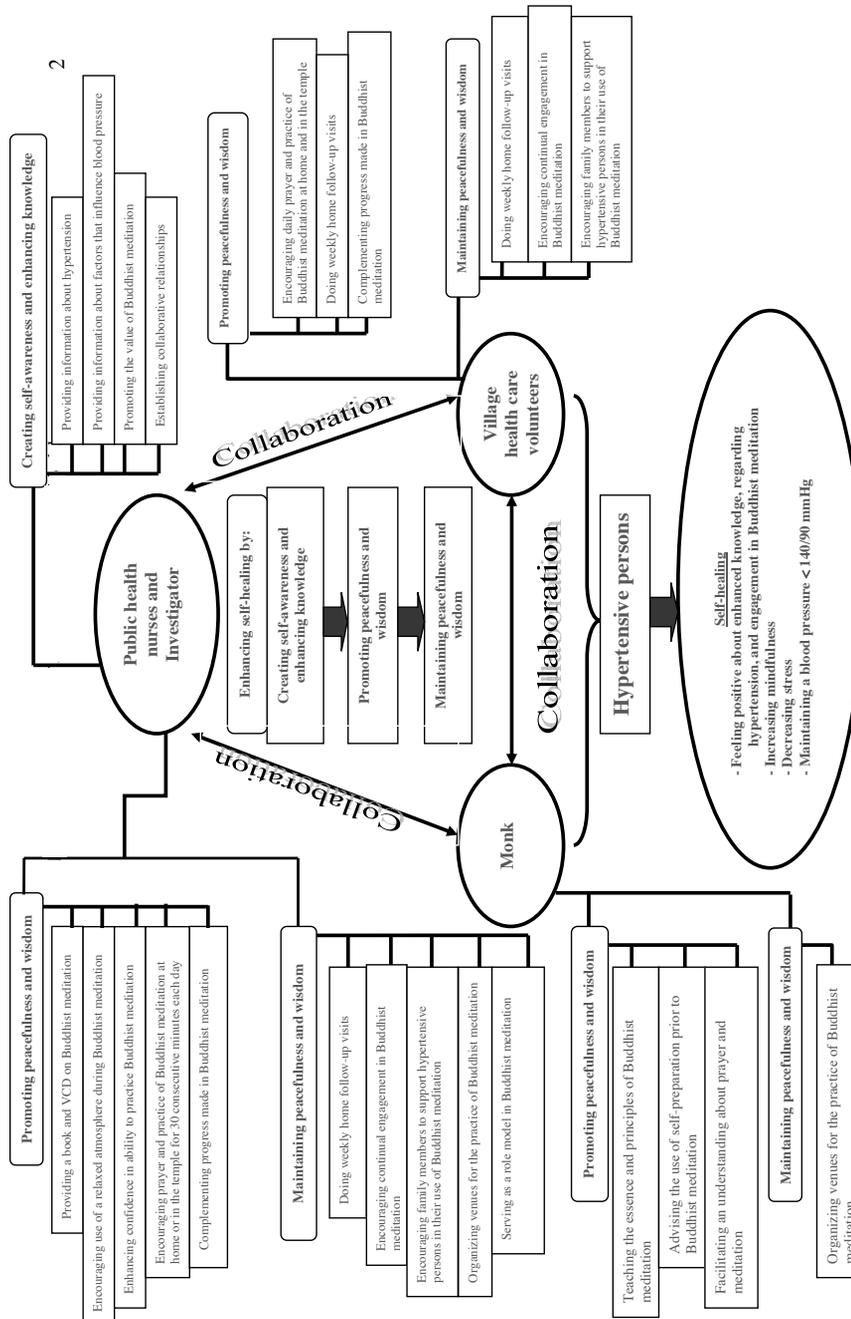


Figure 1 Self-Healing Nursing Model Using Buddhist Meditation to Treat Hypertension

‘Satipatthana’ and, therefore, are believed to assist in the realization of nibbana or the elimination of suffering (i.e. discomfort or stress).<sup>23,26</sup> The monk’s role, related to teaching the hypertensive participants about meditation, also involved advisement on the use of self-preparation (prayer), prior to engaging in meditation, and facilitation of an understanding about prayer and meditation.

To supplement the monk’s action in teaching meditation to the hypertensive participants, the roles of the PI and public health nurses included: providing a book and VCD on Buddhist meditation; encouraging use of a relaxed atmosphere during Buddhist meditation; enhancing confidence in the ability to practice Buddhist meditation; encouraging daily prayer and practice of Buddhist meditation, at home or in the temple, for 30 consecutive minutes; and, complementing progress made in Buddhist meditation. The role of the five village healthcare volunteers during the second major self-health action, promoting peacefulness and wisdom, involved: encouraging daily prayer and practice of Buddhist meditation at home or in the temple for 30 consecutive minutes; doing weekly home follow-up visits after completion of 1–2 meditation training sessions; and, complementing progress made in Buddhist meditation.

The third and final self-healing action, maintenance of peacefulness and wisdom, lasted eight weeks and involved the PI, one of the two public health nurse, one healthcare volunteer and the monk. The roles of the PI, public health nurse and healthcare volunteer included: doing weekly home follow-up visits; encouraging continual engagement in Buddhist meditation; and encouraging family members to support hypertensive persons in their use of Buddhist meditation. The PI and public health nurse also served as role models, for the hypertensive participants, in Buddhist meditation by engaging in meditation on a regular basis. Finally, the PI, public health nurse and monk worked together to organize venues for the practice of Buddhist meditation on every Buddhist

Holy Day and during Buddhist Lent.

*Phase III – Evaluation of the Self-Healing Model:* The third phase of the study, conducted solely by the PI in the homes of the hypertensive participants, focused on evaluation of implementation of the model done during Phase II of the study. Phase III lasted 16 weeks. The evaluation involved: measuring participants’ blood pressures each month; assessing how participants felt about having enhanced knowledge regarding hypertension and engagement in Buddhist meditation; and, comparing participants’ pre- and post-meditation stress and mindfulness levels.

The participants’ blood pressures were measured, using the same blood pressure monitor (Microlife 3AG 1) used in Phase I, each month after they had engaged in Buddhist meditation for at least 3 months. Assessment of the hypertensive participants’ feelings, about their enhanced knowledge regarding hypertension and engagement in Buddhist meditation, was done via two interviews per participant. One interview was done after completion of the first major self-healing action, creating self-awareness and enhancing knowledge (i.e. learning about hypertension and contributing factors), while the second interview was carried out after completion of the second major self-health action, promoting peacefulness and wisdom (i.e. learning how to engage in Buddhist meditation). An interview guide was used during each interview and included questions such as: “What do you believe are the results of your engagement in Buddhist meditation?; and, “How did you feel after engaging in Buddhist meditation?” Finally, assessment of the hypertensive participants’ stress and mindfulness levels, using the same two questionnaires (TST<sup>30</sup> and FMI<sup>31</sup>) utilized in Phase I, were done once they had engaged in continuous Buddhist meditation for one month.

*Data Analysis:* Descriptive statistics were used to describe the demographic data, blood pressure readings, stress levels and mindfulness levels. The qualitative data were analyzed via content analysis.

**Rigors of Qualitative Research:** Trustworthiness of the qualitative component of the study was established using four criteria: credibility, transferability, dependability and confirmability.<sup>34</sup> Credibility was established by prolonged engagement, persistent observation, data triangulation, peer debriefing and member checking. Transferability was established by clearly describing a data base with sufficient information and detailed descriptions for the reader to understand that the actions used could be applied in similar settings. Dependability was established by providing enough information to enable future researchers to replicate the work. Confirmability was established by analyzing data and checking its correctness with members of the research team and the study participants.

Validity and reliability of the quantitative component of the study were maintained through use of valid and reliable questionnaires, and the same monitor for measuring all participants' blood pressures. In addition, to maintain consistency in the administration of all measurements, only the PI administered the questionnaires and measured blood pressures.

## **Results**

As previously noted, only 12 of the original 30 hypertensive participants who began the study remained throughout all three phases of the research. Thus, the data obtained and reported during Phase III (evaluation) of the study are from those individuals.

**Assessment of participants' feelings regarding enhanced knowledge about hypertension:** The first major self-healing action, creating self-awareness and enhancing knowledge (i.e. learning about hypertension and contributing factors) improved the hypertensive participants' understanding about their illness and related risk factors. By reflecting on their current health behaviors, they were able to identify and understand inappropriate actions (i.e. eating fatty foods and becoming stressed) that could contribute

to uncontrolled blood pressure. The hypertensive participants began to realize they needed to cease inappropriate health behaviors in order to successfully control their blood pressures. These conclusions are supported by the following statements made by participants:

*"I noticed if I ate fatty foods and then was visiting my doctor, my blood pressure would be higher. I think I should eat fewer fatty foods."*

*"I think that distress and tension are contributors to my high blood pressure. When I am angry or unhappy, my blood pressure tends to be high. It was very high when I had the doctor check it. My face was hot and very red."*

*"I try not to eat fatty foods. I have made an effort to lose weight and have lost two kilograms. I don't eat salty foods anymore and I don't add fish sauce to my food. I don't use monosodium glutamate either."*

Although most participants were aware of risk factors related to their hypertension, three of the 12 could not adapt to eliminating their inappropriate health behaviors (i.e. eating fatty foods and being stressed). They could not suppress the desire to eat fatty and salty food because they really liked it. Their feelings are reflected in the following statements:

*"I like to eat desserts, salty foods and salted fish. Fish maw curry is my favorite. I tried to cut down, but couldn't resist it whenever I smelled its odor."*

**Assessment of participants' feelings about engagement in Buddhist meditation:** The second major self-healing action, promoting peacefulness and wisdom, involved engagement, by the hypertensive participants, in Buddhist meditation over 20 weeks. Nine of the 12 participants' thoughts about involvement in meditation are reflected in the following statements:

*“At first I could only sit and meditate for five minutes. Then I gradually increased my time to 30 minutes, then 40, then 50. Now, I can sit for an hour.”*

*“I think meditation practice is in our mind. The belief we can do it is important. We must try. I was discouraged at first, but I have confidence that I can do it now.”*

*“Praying, meditation practice and listening to Dharma made me feel meritorious so that I and my family will be happy and prosperous in the next life.”*

*“I feel my mind is more peaceful and organized. I can calm my mind when it is noisy. I can sit more peacefully when there is noise. My mind wasn't that steady and organized when I first began meditation. Now, I sleep well every night.”*

*“I understand we are born, become old, become sick, and die. We do not have a permanent self. I understand more than before starting meditation. Life is uncertain, so we shouldn't form attachments. The more attached we are to things, the more stressed we become.”*

*“I used to worry a lot about expenses when the morning glory field flooded. Now I can just accept it.”*

Three of the 12 hypertensive participants were unable to engage in Buddhist meditation on a regular basis. Their major obstacle was an inability to focus on their breathing long enough to achieve adequate concentration, as reflected in the following statement.

*“I couldn't sit for long periods of time to meditation. I could only sit for about five minutes and sometimes even less. I don't know what happened to my mind. It just wouldn't concentrate. I thought about doing different things until I gave up.”*

The three participants who were not successful in engaging in at least 30 minutes of consecutive meditation did, however, indicate they did feel meritorious and good when they attempted to engage in Buddhist meditation.

*“I liked to think about other things while doing sitting meditation...I just couldn't be steady for long. My mind just liked to play around. However, it felt good just doing meditation because it was like doing good things. The monk said we would gain merit if we prayed or practiced meditation. This merit is extended to others and helps us to live happily, be healthy, and enjoy prosperity in both this world and the next.”*

**Stress levels:** The pre- and post-meditation stress level (assessed by the TST<sup>30</sup>) of all 12 hypertensive participants were compared during Phase III of the study. The nine participants, who successfully engaged in daily meditation, for at least 30 consecutive minutes over one month, were found to have lower post-meditation stress level scores compared to their pre-meditation stress level scores. Two participants (22%) went from “severe stress” to “good mental health,” while six (67%) went from “severe stress” to “normal.” One (11%) participant went from “mild stress” to “normal.”

The pre- and post-meditation stress levels of the three hypertensive participants, who failed to engage in daily 30 consecutive minutes of meditation, were also compared. Two (67%) of them went from “severe stress” to “mild stress,” while one (33%) went from “mild stress” to “normal.” Thus, although these participants did not regularly engage in meditation, they did demonstrate decreases in their post-meditation levels of stress compared to their pre-meditation levels of stress.

**Mindfulness levels:** The pre- and post-meditation mindfulness levels (assessed by the FMI<sup>31</sup>) of the 12 hypertensive participants were compared during Phase III. The nine participants, who

successfully engaged in daily meditation, for at least 30 consecutive minutes over one month, were found to have increased post-meditation mindfulness scores compared to their pre-meditation mindfulness scores. Their mean score for mindfulness went from 34.66 (pre-meditation) to 46.11 (post-meditation). For the three participants, who failed to engage in daily meditation, their mean score for mindfulness went from 27 (pre-meditation) to 31.66 (post-meditation). Thus, although these participants did not regularly engage in meditation, they did demonstrate an increase in their levels of mindfulness.

**Blood pressure levels:** The pre-and post-meditation blood pressure levels of the hypertensive participants were compared. The nine participants who engaged in daily meditation were found to have lower post-meditation blood pressure readings (after completing at least 3 months of meditation) compared to their pre-meditation blood pressure readings. Their average blood pressure readings went from 152.67/94.56 mmHg (pre-meditation) to 130.11/80.22 mmHg (post-meditation). In addition, their blood pressure readings consistently were < 140/90 mmHg. The three hypertensive participants, who did not engage in daily Buddhist meditation, had increases in their post-meditation blood pressure readings compared to their pre-meditation blood pressure readings. Their average blood pressure readings went from 149.33/81.33 mmHg (pre-meditation) to 150.11/85.33 mmHg (post-meditation).

## **Discussion**

The successfulness of the development and implementation of the model appears to be due to the strong collaborative efforts of the study participants. The fact the PI, public health nurses, monk and village health care volunteers carried out their roles in a professional and thorough manner facilitated the hypertensive participants in their understanding of hypertension and its related risk factors, and their

engagement in Buddhist meditation. Hypertensive individuals, using Buddhist meditation as a therapy, need to be knowledgeable about their illness and to have proper instruction regarding how to practice Buddhist meditation.<sup>35</sup>

The fact that 9 of the 12 hypertensive participants indicated their need to confront and deal with their inappropriate health practices, related to their hypertension, can be explained by the mindfulness mechanisms described by Shapiro, Carson, Astin and Freedma.<sup>36</sup> The nine participants experienced an increase in their levels of mindfulness as a result of engaging in Buddhist meditation. Buddhist meditation includes the qualities of intention, attention and mindfulness, which can lead to a shift in perspective. This is called “re-perceiving” and can cause an increase in one’s self-regulation mechanism. An increase in the self-regulation mechanism helps enhance one’s ability to change behavior, retain healthy behaviors without self-indulgence, and avoid negative behaviors. In addition, the self-regulation mechanism produces cognitive, emotional and behavioral flexibility that can improve one’s ability to adjust responses more easily to stimulants by reducing automatic reactions. This allows one to have the ability to encounter problems without suffering, which can result in a decrease in risk factors (decreased stress) that contribute to hypertension.

Nine of the 12 hypertensive participants, who completed all three phases of the study, demonstrated a reduction in their stress levels, an increase in their mindfulness levels, and a reduction in their blood pressure readings. The peacefulness experienced by these individuals, as a result of engagement in Buddhist meditation, may have been the result of beta endorphin production in the hypothalamus. Beta endorphins have a morphine-like characteristic that can have a positive effect on mood (i.e. peacefulness and calmness).<sup>15</sup> A peaceful state of mind (i.e. reduced stress) can stimulate functioning of the parasympathetic nervous system which results in a decrease in heart rate, dilation

of the peripheral blood vessels and improvement in blood flow.<sup>15, 16</sup> All of these factors can lead to a reduction of one's blood pressure.

The fact that Buddhist meditation had an influence on the stress levels and blood pressure readings of the hypertensive participants is consistent with prior findings. Regardless of the type of meditation practice used, prior studies have found when meditation is performed, for 10 to 45 minutes at least once to twice daily for six weeks or more, there tends to be a decrease in both the systolic and diastolic blood pressure readings,<sup>17, 18, 19, 20, 21</sup> and levels of stress.<sup>17, 18</sup>

### Limitations

Like all studies, this study had limitations that need to be taken into consideration. The model developed, implemented and evaluated involved only hypertensive individuals living in one community in southern Thailand. In addition, all participants were Buddhists and had a low socio-economic level. Thus, this model may not be applicable to hypertensive individuals from other religions, cultures or socio-economic levels.

A major limitation of the study, as a result of the 60% attrition rate brought on by the length of the study, was the low number of hypertensive participants (n = 12) who completed all three study phases. Of those 12 participants, only nine engaged in successful Buddhist mediation. Because of the small number of subjects, no inferential statistics could be done to demonstrate if any of the changes in blood pressure, stress levels or mindfulness levels were statistically significant. Thus, the findings of the evaluation of the model must be used with great caution.

### Future Research

Future research should be conducted on the implementation and evaluation of the model using a much larger hypertensive participant sample size.

In addition, future studies need to obtain a sample from multiple locations, similar to the one used in this study, throughout Thailand. Finally, with future implementation and evaluation studies, that use this model, a sufficient number of measurements regarding stress, mindfulness and blood pressure need to be obtained so that inferential statistics can be used in the determination of whether Buddhist meditation actually has a statistically significant impact on one's stress level, mindfulness and blood pressure.

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# การพัฒนาและการประเมินรูปแบบการพยาบาลเพื่อการเยียวยาตนเอง โดยการใช้สมาธิแนวพุทธบำบัดภาวะความดันโลหิตสูง

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**บทคัดย่อ :** การวิจัยนี้เป็นการศึกษาเชิงปฏิบัติการ มีวัตถุประสงค์เพื่อพัฒนาและประเมินรูปแบบการพยาบาลเพื่อการเยียวยาตนเองโดยการใช้สมาธิแนวพุทธบำบัดภาวะความดันโลหิตสูง กระบวนการวิจัยเกิดจากความร่วมมือของผู้วิจัย ผู้ที่มีภาวะความดันโลหิตสูง พยาบาล พระภิกษุและอาสาสมัครประจำหมู่บ้าน ในชุมชนแห่งหนึ่งของภาคใต้ในประเทศไทย เก็บรวบรวมข้อมูลเชิงคุณภาพ โดยการสัมภาษณ์แบบเจาะลึก การสังเกต การสะท้อนคิดพิจารณา และการบันทึกภาคสนาม นอกจากนี้มีการเก็บข้อมูลเชิงปริมาณโดยใช้แบบสอบถาม ความเครียด แบบสอบถามสติ และเครื่องวัดความดันโลหิตแบบดิจิทัล วิเคราะห์ข้อมูลโดยใช้สถิติบรรยาย และการวิเคราะห์เชิงเนื้อหา

ผลการวิจัยพบว่ารูปแบบการพยาบาลเพื่อการเยียวยาตนเองโดยการใช้สมาธิแนวพุทธบำบัดภาวะความดันโลหิตสูง ประกอบด้วยการส่งเสริมการเยียวยาตนเอง 3 ขั้นตอนหลัก คือ (1) การสร้างความตระหนักในตนเองและการให้ความรู้ (2) การส่งเสริมความสงบใจและปัญญา และ (3) การดำรงไว้ซึ่งความสงบและปัญญา ซึ่งการสร้างความตระหนักในตนเองและการให้ความรู้ เป็นการให้ข้อมูลที่เกี่ยวข้องกับความดันโลหิตสูงและปัจจัยที่มีผลต่อความดันโลหิตสูง การส่งเสริมให้เห็นคุณค่าของการทำสมาธิแนวพุทธและการสร้างความร่วมมือ ส่วนการส่งเสริมความสงบใจและปัญญาประกอบด้วย การให้ความรู้เกี่ยวกับสาระที่สำคัญและหลักการทำสมาธิแนวพุทธ การแนะนำการเตรียมตัวก่อนการทำสมาธิแนวพุทธ การส่งเสริมให้เกิดความเข้าใจในการสวดมนต์และการทำสมาธิแนวพุทธ การให้คู่มือและวีซีดีเกี่ยวกับการทำสมาธิแนวพุทธ การสนับสนุนให้เกิดบรรยากาศผ่อนคลายในระหว่างปฏิบัติสมาธิแนวพุทธ การส่งเสริมให้เกิดความมั่นใจในความสามารถในการทำสมาธิแนวพุทธ การกระตุ้นให้สวดมนต์และทำสมาธิแนวพุทธที่บ้านหรือที่วัด อย่างน้อย 30 นาที ทุกวันอย่างต่อเนื่อง ส่งเสริมความก้าวหน้าในการทำสมาธิแนวพุทธและเยี่ยมบ้านทุกอาทิตย์หลังจากที่ให้ความรู้ในการทำสมาธิ สำหรับการดำรงไว้ซึ่งความสงบและปัญญา ประกอบด้วย การเยี่ยมบ้านเดือนละครั้ง การสนับสนุนให้ทำสมาธิแนวพุทธอย่างต่อเนื่อง การกระตุ้นให้สมาชิกในครอบครัวสนับสนุนให้ผู้ที่มีภาวะความดันโลหิตสูงทำสมาธิแนวพุทธ จัดให้มีการสวดมนต์และการทำสมาธิแนวพุทธทุกวันพระและทุกวันในวันเข้าพรรษาที่วัด และเป็นแบบอย่างที่ดีในการทำสมาธิแนวพุทธ

จากการนำรูปแบบการพยาบาลเพื่อการเยียวยาตนเองโดยการใช้สมาธิแนวพุทธบำบัดภาวะความดันโลหิตสูงไปใช้พบว่า ผู้ที่มีภาวะความดันโลหิตสูง 9 ใน 12 ราย สามารถนํารการทำสมาธิแนวพุทธแทรกเข้ามาในชีวิตได้อย่างต่อเนื่องจนเกิดการเยียวยาตนเองได้ โดยเกิดความรู้สึกที่ดีต่อการได้รับการส่งเสริมความรู้เกี่ยวกับภาวะความดันโลหิตสูงและการปฏิบัติสมาธิ ระดับสติเพิ่มขึ้น ระดับความเครียดลดลง และสามารถควบคุมระดับความดันโลหิตให้ต่ำกว่า 140/90 มิลลิเมตรปรอท

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