The Use of Hot Footbaths for Enhancing Sleep as a Japanese Art Form of Nursing: a Review on the Development of the Technique (1876-2005)

Ako Yoshinaga¹, Teruko Yoshimoto², Kazuko Ishigaki²

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A comparison of nursing techniques advocated for sleep enhancement between nursing textbooks from Japan and English-speaking countries revealed that the application of hot footbaths to induce sleep was unique to Japan.

The aims of this study were to investigate the domestic development, and the historical and cultural background that led to the development of the footbath for inducing sleep in Japan.

Japanese nursing textbooks were reviewed chronologically for descriptions of the purposes of footbath care. When the reason for administering footbaths changed to sleep-enhancement for the first time, the possible contribution of other sleep-enhancement methods employing heat and/or stimulation of blood circulation was examined. The background influencing this transition was also examined.

Footbath care was imported into Japan the end of 19th century when modern nursing education was introduced to the country. In 1879, footbath care was described as a means of alleviating congestive headaches by improving blood circulation. However, the reason for administering footbaths changed over time and it was only in 1960 that hot footbaths were described in a textbook as a means of enhancing sleep.

The authors propose that a nurse developed the idea of administering footbaths to promote sleep by integrating the following knowledge: First, the sleep-promoting effect associated with a hot towel massage, initially described in 1951, was combined with the knowledge that footbaths also improved blood circulation, as initially described in 1876. In addition, nurses recognized that footbaths reminded clients of bathing, and that, based on the nurse’s own daily experience, evening baths had sleep-enhancing effects. The nurse-client relationship in Japan was considered to be one of the key factors affecting the background development of this new application of footbaths. Nurses were acutely aware of the sleeping patterns of individual clients, and would have been responsible for his/her daily basic hygiene using hot towels and footbaths.
Introduction

A unique method involving the use of hot footbaths for enhancing sleep has been employed by nurses in Japan for decades. A recent systematic review of foot bathing performed by Japanese nurses revealed that an average of 62% (range = 50% to 94% depending on the study) of inpatients who suffered from insomnia slept better after footbath administration (Yoshinaga and Yoshimoto 2005, pp. 4-13).

Cross-sectional literature searches have revealed that the application of hot footbaths for inducing sleep was only described in the Japanese versions of “Fundamentals of Nursing”. The authors reviewed four major textbooks from Japan (Kodama, 2005, pp. 230-5; Kuwano and Sato, 2004, pp. 194-208; Masago, 2005, pp. 271-90; Myojin, 2005, pp. 221-57) and eight textbooks sold by internet bookstores in the USA, UK, and Australia (Coy, 2001; Coy, 2002; Hill, 2004; Kozier et al., 2004; Potter and Perry, 2005; Reimer, 2003; Taylor et al., 2005; Topham, 2004), and Nursing Interventions Classification (Dochterman, 2004, p. 658). The authors conducted online searches for articles related to footbath administration in the Medline (see references) and Cinahl (see references) databases, using the keyword “hot footbath”, and found that the first English research article addressing the application of footbaths for sleep enhancement was submitted from Japan (Sung 2000, pp. 21-7).

Why then has the application of footbaths for enhancing sleep been restricted to Japan? To answer this question, this study aimed to investigate the domestic changes in the application of footbaths, and the factors affecting these changes in Japan. This study also sought to investigate the culture of bathing and other factors that may have facilitated the adoption of footbaths for promoting sleep.

Methods

Literature search:

Japanese nursing textbooks published from the late 19th century to more recently published material were used in this study since modern nursing education was imported into Japan from the UK and the USA during this period.

The authors restricted literature surveys to the “major” textbooks, as these have had a marked influence on nursing education and nurses’ knowledge in Japan. For the period 1867-1944, we chose the 19 books that were selected for republication as a series of reprinted works called “Modern Japanese Nursing Masterpieces,” published by Oozora in Tokyo in 1978-79. For the years after 1945, we selected textbooks that had been collected by more than 100 university nursing staff and held at a university library.

Books and articles related to the history of bathing and bathhouses in Japan were searched for using the Google internet search engine (see references) with the Japanese keywords “bath” or “bathing” plus “history” and “Japan”.

Literature review:

First, the authors reviewed the aforementioned nursing textbooks for descriptions of the reasons why footbath care was administered, as well as for descriptions of other nursing methods for sleep enhancement that employed heat and/or the stimulation of blood circulation. Once the reason for administering footbaths was initially characterized as being that of sleep-enhancement, the possible contribution of other sleep-enhancement methods was also examined.

The authors also examined the contribution of the cultural background of bathing, and considered this to be a precursor of footbath administration given the similarities between the two activities. The authors then extracted any information that could be associated with relaxing and the sleep-enhancing effects of bathing, as well as information on the history and the roles of these activities in the Japanese lifestyle from the literature surveyed. Based on this information, the authors hypothesized that the Japanese custom of bathing affected the application of footbaths for promoting sleep.

Results

A longitudinal investigation of nursing textbooks revealed that footbaths were administered specifically for sleep enhancement by 1960, and that this occurred along the following general timeline:

At the end of the 19th century, footbath care was imported into Japan through modern nursing education programs from the UK and the USA. Footbaths were...
administered to alleviate congestion and headaches by improving blood circulation. The description provided in a Japanese textbook for nurses (Anderson, 1879, p. 39) can be translated into English as follows: "Footbaths are used to treat snuffles and headaches because they stimulate the flow of blood from the upper body to the lower body extremities." Anderson was an English surgeon who was responsible for developing the training courses for medical doctors and nurses in the Japanese Navy. Footbath was responsible for developing the training courses for the flow of blood from the upper body to the lower body used to treat snuffles and headaches because they stimulate a hot wet towel.

The sleep-inducing effect of footbaths was thus already clearly described in the textbook of Hirano & Uno (1960, pp. 315-22), and, of the four methods described therein, only footbaths have remained in a form that is still employed today. In a chronological review of textbooks, Yoshinaga and Yoshimoto (2007, pp. 70-7) reported preliminary results of the development of this Japanese-style footbath care in a Japanese journal.

Given the similarities between hot baths and footbaths, the culture of bathing is considered to be a key factor affecting both the change in the application of footbaths, and the effectiveness of footbaths in promoting sleep.

Tsutsui (2008, p. 220-221) noted that Thunberg from Sweden, Huijsjen van Kattendijke from The Netherlands and Eulenburg from Germany were all surprised to discover that Japanese people bathed almost daily in the late 18th and 19th centuries. Tsutsui found it surprising that, "The Japanese loved bathing tremendously and had established the custom of evening baths in a remarkably short time after the introduction of hot bath tubs in public baths!" (English translation by the authors). Given the popularity of hot spring resorts for over a thousand years in Japan, Tsutsui (2008, p. 224) inferred that Japanese people had long enjoyed soaking in hot water up to their necks, and that this custom contributed to the popularity of hot bath tubs.

The first modern public bath in Tokyo was established in 1877 (Matsudaira 1997, p. 109). The bath had a large, deep tub that was filled with hot water and a large space for people to wash themselves outside the tub. People referred to it as a "Hot Spring" as they were able to savor the enjoyment of a real hot spring without traveling out of their town (Matsudaira 1997, pp. 109-111) (English translation by the authors). The concept of the public bath became so popular that similar public baths opened up in short succession across the country. Part of this success was related to the fact that people could shift from their public to private spheres of life simply by going to a public bath after work (Matsudaira 1997, p. 203) (English translation by the authors). The period of public baths boomed until the end of 1960s, when the prosperity that accompanied the high economic growth of the time meant that people could afford to furnish their own homes with bath tubs and no
longer needed to go to public baths any more.

Discussion

Based on a longitudinal investigation of nursing textbooks, the application of footbaths for the express purpose of enhancing sleep by 1960 was considered to have arisen due to three factors, one of which was bathing.

The authors propose that the close relationship that exists between nurses and their clients would have enabled nurses to notice that the administration of a massage with a hot, wet towel at bed-bath time would have promoted sleep that night. This is because the nursing system during the late 19th century in Japan was based upon 24-hour, one-to-one care of clients administered by nurses visiting the client’s house for days or weeks at a time. In fact, Ozeki (1908b, pp. 1-23) proposed that nurses should assume responsibility for all of the daily needs of the client, and also that nurses needed to take care of clients sincerely so that the client would trust the nurse as if she were a member of his/her own family.

Since ordinary Japanese people would have been accustomed to soaking in hot baths (Tsutsui 2008, p. 220; Matsudaira 1997, pp. 109-111), so too would the nurses. Based on their own experience, the nurses would have known that most people relaxed and slept well after a hot bath.

The nurses would also have had extensive knowledge of the effects of massage with a hot wet towel on sleep enhancement, and that massage had a similar effect to footbaths, which was to warm the feet and improve blood circulation.

Thus, by integrating their nursing knowledge with their own personal experience, nurses likely thought that hot footbaths, as well as the administration of a massage and bathing before bed, improved blood circulation and that this in turn would enhance sleep. By 1960, it is possible that through deductive thinking, nurses may also have considered the administration of hip baths or exercise as being beneficial for sleep-enhancement.

When the applicability of these methods is considered within the context of the hospital environment, footbaths would have been the only one that could be administered at the bedside of the client immediately before bedtime. As a result, by 1973, the sleep-inducing effect of footbaths had been clearly described in nursing textbooks in the form that is used today.

The culture of bathing was considered a key factor in the effectiveness of footbaths for promoting sleep.

The authors consider that the Japanese custom of bathing was a key factor in promoting the application of hot footbaths for inducing sleep through promotion of para-sympathetic activity.

Insofar as the application of hot footbaths to promote sleep is concerned, Yoshinaga and Yoshimoto (2005, pp. 4-13) hypothesized that a combination of the sensations of warmth and relaxation associated with footbaths promotes the activity of the para-sympathetic nervous system, dilating the blood vessels, increasing blood flow, and decreasing the discrepancy between the core and body surface temperatures. In other words, the relatively higher core body temperature decreases, which Zulley (1981, pp. 314-8) demonstrated induces sleep.

Most Japanese people are likely to feel comfortable and relaxed during a footbath, partly because they are used to soaking in a hot bath. By bathing before going to bed in winter, Japanese were likely to be less affected by the lower temperatures of the cold rooms in which they slept. Conversely, in the humid summers of Japan, bathing would have offered Japanese respite from perspiration and would have relieved them from the stresses and tiredness of the day.

However, in the event that clients do not feel relaxed during or after the administration of a footbath, the activity of para-sympathetic nervous system will not become dominant, and the aforementioned mechanism of sleep enhancement cannot be expected. The authors therefore believe that if clients are not familiar with the custom of soaking in a hot bath, that they would be less inclined to relax at the time of their first footbath.

The authors propose that soaking in a hot bath at the end of the day is a life-long sleep-inducing ritual for many Japanese, and a hot footbath can promote sleep partly because it is a substitute for the sleep ritual involving a hot bath.

The authors consider that Japanese nurses have employed
footbaths as a substitute for baths in situations that preclude taking a bath at night. This is particularly relevant in situations where there is insufficient manpower available to nurses for administering an evening bath, or when a client’s physical condition precludes the administration of a bath. Inpatients are able to incorporate a footbath into their bedtime routines and simulate the after-work ritual of having a hot bath, in so doing, they shift from their daytime environment to their private life and feel sufficiently relaxed to fall sleep.

Conclusions

The authors examined a unique Japanese nursing method involving the application of footbaths for enhancing sleep, cross-sectionally, chronologically, and from the viewpoint of effectiveness for promoting sleep. We found that cultural aspects were intrinsic to both the development of the footbath for promoting sleep and the effectiveness of footbaths for sleep enhancement.

Acknowledgement

The authors wish to acknowledge the grant provided by Chiba University 21st Century Center of Excellence Program, the Center for the Creation and Dissemination of New Japanese Nursing Science incorporating Culturally Appropriate Care.

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