



# Fostering the acupuncture practice for health outcomes research: The perspective from Taiwan

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Health outcomes research is globally recognized as a thriving-scientific discipline, which considers patient outcomes to be a summary of the treatment, patient, and healthcare system. Being complex and multicomponent in nature, health outcomes research involves a combination of political, healthcare, social, and economic environments.<sup>1</sup> Therefore, rather than a single component, interactive effects among several components is deemed necessary to promote a strategic plan for novel and multidisciplinary research.<sup>2</sup>

Among Asian countries, Taiwan is considered a potential leader in developing high-quality research and promoting health. In particular, it is becoming a world pioneer in health system science, transforming its healthcare system into a single-payer system with universal coverage. This is possible because Taiwan includes a diversity of Asian ethnicities, creating a broader substrate for the investigation of diseases and treatments. Furthermore, Taiwan has the leadership of integrating informative technology with health outcomes research.<sup>1</sup> For instance, Taiwan is a leader in bariatric surgery, in terms of clinics and research.<sup>3</sup> The research of bariatric surgery in Taiwan not only provides the clinical information regarding health outcomes,<sup>4</sup> but also basic mechanistic insights, such as the roles of gut hormones,<sup>5,6</sup> cytokines,<sup>7</sup> adipokines,<sup>8</sup> hepatokines,<sup>9</sup> and bile acids<sup>10</sup> in ameliorating type 2 diabetes mellitus and improving fatty liver disease. All these reasons globally elevate Taiwan to a strategic position for the enhancement of health outcomes research.

Considering the increase in popularity of complementary and alternative medicine, traditional Chinese medicine has received great interest, with a special regard for acupuncture. Originating in China before the Common Era, acupuncture has maintained high popularity throughout history. In the past 70 years, acupuncture practice faced three different periods in Taiwan: transition (1949-1971), development (1972-1994), and standardization (from 1995 to now). In particular, two main events supported

the spread of acupuncture: (1) “acupuncture fever,” with escalation in interest, research, and involved departments in hospitals (in the early seventies); and (2) inclusion of acupuncture treatments in the National Health Insurance coverage (in 1995).<sup>11</sup> Reflecting these policies in an effective impact on society, the proportion of population using acupuncture was over 6% in 2002<sup>12</sup> and increased up to almost 11% in 2011.<sup>13</sup> Furthermore, it appeared to be more popular among women, middle-aged people, residents of highly urbanized areas, and patients with musculoskeletal injury or disorders.<sup>12</sup> Standardization of the process induced an improvement in the quality of acupuncture practice, because of the growth on research projects and legal provisions. However, with the introduction of disposable needles with a tube, we experienced a radical change in the insertion technique and in the preservation of sterile environment.<sup>11</sup>

Therefore, promotion of the use of disposable needles with a tube and maintenance of sterile environment, required in hospitals and taught at universities, have become the main objectives, allowing institutionalization and integration of acupuncture practice in the Taiwanese health care system.<sup>11</sup> In particular, the “scientification” and modernization of acupuncture is emphasized upon the main institutions (i.e., hospitals and universities),<sup>11</sup> forming a combined action of political, healthcare, social, and economic environments,<sup>1,14</sup> which is the recent target of health outcomes research. Thus, Taiwan can be considered a global leader in health outcomes research for the area of traditional Chinese medicine, particularly in terms of acupuncture practice.

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