

## Powerful effects of placebo needles

Acupuncture is a medical treatment that involves the insertion of needles into the body. The overall process involves touch, insertion and healing, consisting of multiple components, including somato-sensory stimulation, treatment context and attention to needle-based procedures.<sup>1 2</sup> The placebo acupuncture needle was developed by excluding a specific component of acupuncture treatment—that is, needle penetration.<sup>3</sup> Acupuncture research would not have progressed without the development of placebo needles, but recent studies have often posed a crucial question: is penetration the only therapeutic component of acupuncture treatment that needs to be controlled for in order to create a placebo effect that is equivalent to that of the inert pills used in pharmaceutical studies?

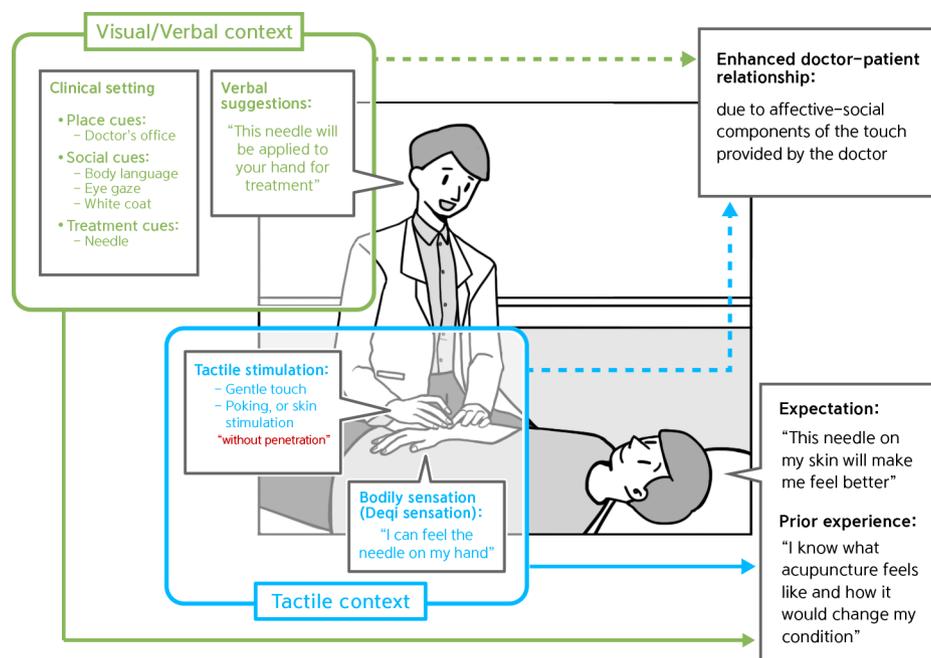
Placebo needles produce powerful ‘specific effects’ relative to other placebos, which are the ‘specific

effects’ of healing rituals themselves.<sup>1</sup> The application of a placebo needle is arguably itself a healing ritual during which the patient is touched by a medical professional, such that the patient believes that the needle has been inserted into his/her body. Although placebo needles were developed as controls for acupuncture treatment, the process of placebo needle application encompasses many of the main components of acupuncture treatment including provision of sensory stimulation by pressure on the skin during treatment. Furthermore, the patient pays attention to his/her own body and develops an expectation of needle application. By incorporating these aspects of the healing process, placebo needles produce stronger placebo effects than other types of placebo.

Touch itself has positive effects on a patient’s experience of pain and affective state.<sup>4</sup> The doctor’s hand gently touching the patient’s body, before and after treatment with placebo needles, is a form of affective interpersonal communication that can mediate alleviation of

symptoms. Pain relief is a reward, but even the experience of moderate pain can be relatively rewarding when the alternative is intense pain.<sup>5</sup> The stimulation delivered to the skin in the absence of penetration by placebo needles (ie, poking) would be a pain or nuisance in a non-medical context; however, such stimulation can be rewarding when the patient is in pain and the action leads to pain relief.

Treatment using placebo needles is also an opportunity for an enhanced doctor–patient relationship, to a greater degree than is possible with the use of a simple placebo pill, which the patient simply holds and swallows. An enhanced doctor–patient relationship may result from the affective-social component of touch during needle administration, as the ritual touch healing provided by the doctor to a patient provides enhanced touch sensations, suggesting an embodied healing mechanism.<sup>2</sup> In a study of patients with irritable bowel syndrome, the group characterised by an ‘augmented’ doctor–patient relationship and treated with



**Figure 1** Powerful effects of placebo needles. Acupuncture treatment, whether real or placebo, encompasses two modalities that are recognised by the patient during treatment: the visual and verbal context, including the clinical setting surrounded by place cues, social cues and treatment cues, together with verbal suggestions; and the tactile context, consisting of tactile stimulation delivered by the doctor, including gentle touch and (in the case of placebo needles) poking without penetration; and the consequential bodily sensation by the patient, including the *de qi* sensation. These contexts combine to form a patient’s prior experience of acupuncture and their expectations and can enhance the doctor–patient relationship.

placebo needles showed significant improvements in all outcome measures compared with the group that had a 'limited' doctor–patient relationship.<sup>1</sup>

Throughout treatment with a placebo needle, the patient continuously pays attention to the process, including the sensations occurring in his/her own body. The *de qi* sensation, which is a composite of unique sensations during acupuncture that is believed to be important for clinical efficacy, and activation of brain areas related to interoception, were observed during acupuncture administration on a rubber hand.<sup>6</sup> Dissociation of the somatosensory aspect of the needle from the contextual and attentional aspects of acupuncture elicited *de qi* sensations.<sup>6</sup> In addition to the bodily attention and sensation, verbal suggestions made during treatment, visual information related to the needle, a patient's previous experience of acupuncture and the social learning associated with acupuncture treatment, interact to create a complex experience of treatment.

The aforementioned factors associated with the placebo needle (ie, the tactile stimulation, an enhanced doctor–patient relationship, bodily sensation and expectation of the effect of treatment) contribute to placebo analgesia and, ultimately,

combine to create a medical context that is multisensory, continuous and powerful, and readily imprinted onto the patient (figure 1). The somatosensory, cognitive and affective effects of the placebo needles and the absence of these effects in inert pills need to be considered in any comparative study attempting to understand and interpret placebo effects in the setting of acupuncture research.

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