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Link to published article: <http://dx.doi.org/10.1108/IJPHM-10-2013-0055>

APA Citation

Chan, K., Tsang, L., & Fung, T. K. (2015). Attitudes toward acupuncture in Hong Kong. *International Journal of Pharmaceutical and Healthcare Marketing*, 9 (2), 158-174. <https://doi.org/10.1108/IJPHM-10-2013-0055>

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Attitudes toward acupuncture in Hong Kong

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Manuscript accepted for publication
International Journal of Pharmaceutical and Healthcare Marketing

Acknowledgement: This study was fully supported by the Department of Communication Studies, Hong Kong Baptist University. We would like to thank the students in Integrated Communication Management program for data collection.

IJPHM acupuncture R2 with names.doc
June 3, 2015

Attitudes toward acupuncture in Hong Kong

Structured Abstract

Purpose: This study aimed at describing and exploring how consumers perceive acupuncture as a medical treatment in relation to biomedicine.

Methodology: Data was collected through an online survey using quota sampling. The attitudes of 879 Hong Kong residents aged 20 or above were surveyed. Questions were generated from a previous focus group study.

Findings: Factor analysis found that attitude toward acupuncture consisted of five underlying dimensions, including trust in biomedicine, risks vs benefits, cure and effectiveness, qualification and skills of acupuncturists, side effects and costs, and severe aftereffects. Lack of trust in acupuncturists and perceived inferiority of acupuncture to biomedicine were the major barriers of public acceptance of acupuncture. Perceived strengths of acupuncture identified were not involving taking medicine, fewer side effects, and being good for preventive care.

Research limitations: This study used a convenience sample recruited through personal networks, so the findings cannot automatically be generalized to the rest of the population.

Practical implications: There is a need to build trust in the therapy and the reputation of acupuncturists through better communication of the profession's qualification and accreditation system, as well as dissemination of clinical evidence on a long-term basis. Consumers need to be better educated about the sensations to be expected during acupuncture and the criteria for selecting an acupuncturist.

Originality: This has been the first quantitative study focusing on Hong Kong consumers' perceptions of acupuncture.

Key words: traditional Chinese medicine, consumer perceptions; health services marketing

Attitudes toward acupuncture in Hong Kong

Introduction

Acupuncture is an integral part of traditional Chinese medicine (TCM), and it has been practiced in China for more than 2,500 years (Lu and Needham, 1980). It is widely used today in various Chinese communities. It involves inserting fine needles into precise points on the human body, followed by manual oscillation of the needles or electrical stimulation via the needles. The oscillation or electrical stimulation triggers calcium flow which interacts stimulates white blood cells to produce endorphins for alleviating pain and nausea (Yang et al., 2011). The World Health Organization has endorsed the use of acupuncture for treating migraine, the nausea and vomiting of chemotherapy, shoulder, knee and back pain, and even stroke (World Health Organization, 2003).

Because of its effectiveness, acupuncture has become a popular medical treatment in North America and Europe (e.g., MacPherson et al., 2006; Xue et al., 2008; Zhang et al., 2012). As a result, acupuncture has drawn a considerable scholarly attention. Many of the studies focus on acupuncture's clinical effects (e.g., Chen and Hsieh, 2012; Ernst et al., 2007; Kaptchuk, 2002; Lee et al., 2004; Sun et al., 2001; Yeung et al., 2009; Vickers, et al., 2012), and most social science research treats acupuncture as a form of complementary or alternative medicine. Very few studies focus on acupuncture *per se*. Therefore, little is known about the public's attitudes toward the therapy. There has also been little systematic study of the perceived differences between acupuncture and biomedicine. This study was designed to address this deficiency. It examined public perceptions of acupuncture, including how consumers perceive it as a medical treatment, the risks involved, and in what ways acupuncture is perceived differently from

biomedicine. The results are intended to help health practitioners market acupuncture as a medical treatment. They will also help policy makers understand consumers' concerns and information needs.

Perception of Acupuncture in Western Societies

In the West, acupuncture is widely acknowledged as a major form of complementary and alternative medicine. For instance, in a 2007 survey by the American Center for Disease Control, 6.5 percent of Americans said they had received acupuncture treatment (McKenzie, 2011). The figure is around 2-3 percent of the population in Australia (MacLennan et al., 1996), Italy (Menniti-Ippolito et al., 2002) and the UK (Ernst and White, 2000). Several European countries including France, Germany and Norway cover acupuncture in their national healthcare insurance systems.

Despite some suggestions that it may have only a placebo effect (Chez et al., 2001), medical professionals and the public in many Western countries have positive perceptions of acupuncture (Baugniet et al., 2000; Furnham and McGill, 2003; Perkin et al., 1994; Ytrehus et al., 2010). Survey findings show that acupuncture is used to treat chronic pain, migraine, arthritis and fibromyalgia (Burke et al., 2006; Kemper et al., 2000; Norheim and Fonnebo, 2000; Patel et al., 1989). Some people who have formed a positive perception of acupuncture have been influenced by personal experience using it (Norheim and Fonnebo, 1998; Chaterji et al., 2007) or that of their relatives and friends (Highfield et al., 2008; Mano and Davies, 2009). Others have turned to acupuncture treatment because other medical techniques failed or were contraindicated (Camp, 1986; Ytrehus et al., 2010). A focus group study with 35 adults in the UK identified four steps

leading to the adoption of acupuncture: establishing a need for treatment; establishing a need for a new treatment; deciding to try acupuncture; and finding an acupuncturist. At their first acupuncture appointment, participants have been found to express hope, optimism, and sometimes concrete expectations of the treatment (Bishop and Lewith, 2013). But despite the therapy's increasing popularity in Western countries, some patients have reported unfavorable views about acupuncture because of painful sensations, its perceived high cost (Shyu et al., 2010), or fear of needles (Highfield et al., 2008). When acupuncture is administered in a general-purpose Chinese medicine clinic, the smell of moxa burning may also annoy patients (Kemper et al, 2000). Some patients still perceive a lack of empirical evidence in support of acupuncture's effectiveness (Mano and Davis, 2009).

Perception of Acupuncture in Chinese Societies

Acupuncture is a widely-used therapy in Chinese communities. In Mainland China, findings from two surveys indicated that the proportion of respondents that had received acupuncture were relatively high, with 30.6 percent in Anhui (Chen et al., 2003) and 50.8 percent in Hebei (Yan et al., 2010). Respondents appreciated acupuncture of having no side-effect, and its ability to cure difficult and rare diseases (Yan et al., 2010). Among non-users of acupuncture in Anhui, 36.7% reported that they did not understand acupuncture and 25% reported that they did not have confidence in acupuncture (Chen et al., 2003). A recent survey in Guangdong found that afraid of pain and slow to take effect were main barriers in adopting acupuncture (Zhao and Zhao, 2013). However, acupuncture was perceived to be effective in the treatment of cervical spondylopathy,

facioplegia and insomnia (Zhao and Zhao, 2013).

Acupuncture is part of the compulsory health insurance scheme in Taiwan, where about 22.6 percent of the population (some 1.3 million persons) has received acupuncture treatment (Chen et al., 2006). Women and the middle-aged are the most frequent users. Acupuncture is used in Taiwan mainly to treat musculoskeletal and neurological disorders. A Taiwanese survey found that most of the respondents perceived acupuncture to be useful in the treatment of chronic diseases, muscle problems, fractures, sprains and joint pain (Chi et al., 1997; Chou, 2001). Another more recent survey showed that the majority of nurses in Taiwan considered acupuncture more helpful than other forms of alternative or complementary medicine (Chu and Wallis, 2007).

In Hong Kong acupuncture is primarily treated as an element of TCM and as complementary or alternative medicine. A 1995 survey revealed that at that time about 5.8 percent of the respondents had received acupuncture treatment (Wong et al., 1995). However, a rising trend of people with higher socioeconomic status using TCM was subsequently reported (Chung et al., 2007). A more recent survey found that about 11.1 percent of the total population had consulted a Chinese medicine practitioner (including acupuncturists) within a month before enumeration (Census and Statistics Department, 2012). Women, the elderly, chronic disease patients and persons with poor general health were frequent users of TCM (Chung et al., 2007).

Views about traditional Chinese medicine differ among social groups. Medical professionals consider its availability and use controversial. A focus group study (Wong et al., 2006) found that medical students had more nuanced views. They acknowledged its advantages as a holistic approach to patient care and treatment, and were willing to

consider that it might be more effective in relieving allergy symptoms, pain and discomfort from chronic ailments. However, they criticized TCM for lack of scientific evidence and they were skeptical about the professionalism of TCM practitioners. They considered professional standards, as well as regulation of the qualifications and practices of TCM practitioners to have significant room for improvement. Another survey of registered nurses in Hong Kong found that two-fifths of the respondents considered TCM unscientific, and more than half found TCM not as effective as biomedicine in the treatment of acute diseases (Holroyd et al., 2008). They felt TCM and biomedicine should not be utilized simultaneously. Though more than half felt that in general TCM should have fewer side-effects than biomedicine, a majority of the nurses did endorse the TCM's holistic principle (Holroyd et al., 2008).

The general public in Hong Kong holds positive attitudes toward TCM. Hong Kong people believe that TCM has fewer side effects than Western therapies (Chung et al., 2007) and they perceive it as particularly useful for minor ailments such as coughs and colds (Lam, 2001). Many Hong Kong residents use Chinese and Western medications concurrently (Lam, 2001). However, the public perceives some weakness in TCM, such as that it is slow to take effect and the medications are inconvenient to prepare (Lam, 2001). Hong Kong government's initiative in TCM development has led to increasing choice for integrative TCM-biomedicine care among patients. However, corresponding inter-professional care between biomedicine doctors and TCM doctors has not been facilitated (Griffiths, 2009).

In Hong Kong, acupuncture is regulated under the regulations controlling traditional Chinese medicine. Traditional Chinese medicine has been integrated into the healthcare

system since 2000. Individuals who wish to administer acupuncture professionally must be registered with the Chinese Medicine Council (Chinese Medicine Council of Hong Kong, 2013a). A person must hold a bachelor's degree in Chinese medicine from an approved institution of higher education before he or she can take a licensing examination and use the title "Chinese Medicine Practitioner" or "Chinese Medicine Practitioner (Acupuncture)" (Chinese Medicine Council of Hong Kong, 2013a). Among the 1,884 active registered Chinese medicine practitioners, about 213 of them are primarily practicing acupuncture (Department of Health, 2011). Traditional Chinese medicine (including acupuncture) currently accounts for 22 percent of all professional medical services in Hong Kong (Chinese Medicine Council of Hong Kong, 2013b).

Most published studies of acupuncture have been conducted in Western countries. Except from Taiwan, there is not much information about how consumers perceive acupuncture in comparison with biomedicine. This study was designed to fill that gap. It addressed the following research questions:

RQ 1: How do Hong Kong consumers perceive acupuncture as a medical treatment?

RQ 2: How do they perceive acupuncture in relation to biomedicine?

RQ 3: What are the perceived risks of acupuncture treatment?

Methods

Sampling

A survey was conducted among a quota sample of Hong Kong residents aged 20 or above during April 2012. Specifically, 88 undergraduates in a research methodology course were assigned to invite friends to visit a designated web site and complete an online

questionnaire. Each student was asked to recruit at least one male and one female adult in each of the age groups 20–29, 30–39, 40–49, and 50 or above. Students themselves did not fill in the questionnaire. Students also did not serve as interviewers. A total of 948 online questionnaires were submitted, among which 69 questionnaires were not usable as less than half of the questions had been answered. The final sample consisted of 879 individuals.

Measures

The questionnaire was developed through a prior focus group study of consumers' perceptions toward acupuncture (Chan et al., forthcoming). The statements collected in that qualitative study were classified into three categories: those expressing perceptions of acupuncture as a medical treatment (Part 1 statements), those comparing acupuncture with biomedicine (Part 2 statements), and those measuring the perceived risks of acupuncture (Part 3 statements). Six to ten statements were developed for this survey from the observations in each of the three categories. The participants were then asked to respond to the statements using 5-point scales on which '1' indicated strong disagreement and '5' strong agreement. For instance, "Acupuncture is a medical treatment which can cure diseases that does not involve taking medicine." The respondents were also asked about what conditions they perceived could be dealt with effectively by acupuncture. Ten conditions were suggested and the respondents were asked to check as many choices as appropriate. The conditions had all been brought up in the focus group study (Chan et al., forthcoming). Demographic information about the respondent's age group, sex, education, housing, occupation, and household income was also collected. The respondents were

also asked whether or not they had consulted an acupuncturist or other TCM professional during the previous three years.

Data analysis

Factor analysis of the 26 statements using principal component analysis and varimax rotation method was conducted. The means of the attitude statements were compiled and tested for significant difference from the scales' mid-point of 3 using one-sample t-tests. The focus group study had shown that acupuncture users and non-users differed significantly in their perceptions of the risk of acupuncture. Because of the acupuncture's association with TCM, respondents' perceptions of acupuncture would be expected to depend also on their experiences with TCM. Based on this argument, a variable labeled "prior experience" was constructed. It was set to one if a respondent had not received TCM or acupuncture therapy in the previous three years, two if the respondent had used TCM but not acupuncture, and three if the respondent had used both within the previous three years. To compare the attitudes of the three experience groups, one-way ANOVA tests were conducted. To save space, only the results of the ANOVA tests are displayed in the tables.

Findings

Altogether, 879 completed questionnaires were collected. The demographic profile is summarized in Table 1. There were nearly equal numbers of male and female respondents. A majority of them were aged 20 to 29 (34.4 percent). More than half of the respondents claimed to have had post-secondary or university education, and about two

thirds claimed a monthly household income of HK\$10,000 to HK\$39,999. The median monthly household income in Hong Kong in 2010 was HK\$18,000 (Information Services Department, 2012). Slightly more than one fourth of the respondents reported having received some forms of acupuncture therapy in the previous three years, while more than two thirds of them had consulted a traditional Chinese medicine doctor. More respondents were classified into group 2 (used TCM but not acupuncture) than the other two groups.

[Insert Table 1 about here]

Factor analysis

The 26 items of perceptions and attitude toward acupuncture were subjected to principal components analysis with varimax rotation method. The results revealed the presence of six components with eigenvalues exceeding one, explaining 11.7%, 11.6%, 9.7%, 7.4%, 5.7%, and 4.7% of the variance respectively. The six-component solution explained a total of 50.9% of the variance. Table 2 summarizes the factor loadings of the six-component solution. The first factor was named as “trust in biomedicine”. It reflected respondents’ perception that biomedicine was superior to acupuncture because of its scientific evidence and rigorous regulation. The second factor was named as “risks vs benefits”. This factor measures how the respondents weigh between the risks related with the acupuncture process versus its benefits of healing. The third factor was named as “cure and effectiveness of acupuncture”. It reflects the perception of the curing power of acupuncture. The fourth factor was named as “qualification and skills of acupuncturists”. It focuses on the skills and qualification of the acupuncture practitioners. The fifth factor was named as “side effects and costs”. It measures respondents’ perception about the side

effects and treatment costs of acupuncture in relation to biomedicine. The last factor was called “severe aftereffects”. It was a single-item factor reflecting the severe consequence of malpractice of acupuncture. The part 1 statements formed the factor “cure and effectiveness of acupuncture”. The part 2 statements formed the factors “trust in biomedicine” and “side effects and costs”. The part 3 statements formed factors “risks vs benefits”, “qualification of acupuncturists”, and “severe aftereffects”. The factor analysis results supported the classification of the 26 statements into three categories.

[Insert Table 2 about here]

Perceptions of acupuncture as a medical treatment

The respondents’ perceptions of acupuncture as a medical treatment are summarized in Table 3. Five out of six statements had mean scores that differed significantly from the mid-point of 3.0. Many respondents who had used acupuncture within the previous three years seemed unclear about whether the therapy involves taking medicine. So there was clearly some confusion between acupuncture and TCM in general. Most respondents said they saw acupuncture to at least some extent as a preventive measure. They gave some credence to the idea that acupuncture can cure diseases permanently and that it can cure difficult and strange diseases as well as common illnesses such as colds and flu. They had no strong views, however, on whether acupuncture could cure diseases when other medical treatments had failed.

[Insert Table 3 about here]

The types of illness perceived responsive to acupuncture are summarized in Table 4. More than half of the respondents believed that acupuncture could effectively deal with

all four of the following types of problems: problems with movement, various types of pain, paralysis, and insomnia. On the other hand, less than one-fourth of the respondents believed that acupuncture could effectively deal with chronic diseases, Alzheimer's disease or Autism.

[Insert Table 4 about here]

Comparison of acupuncture with biomedicine

The respondents' perceptions of acupuncture compared with biomedicine are summarized in Table 5. All ten of the attitudinal statements had mean scores significantly different from the 3.0 mid-point. In other words, the respondents perceived significant differences between acupuncture and biomedicine. They agreed with all of the statements except that "Acupuncture cures faster than biomedicine." They considered biomedicine more scientific, governed by more vigorous rules, and less costly. They expressed more trust in doctors practicing biomedicine and reported that they would consult a conventional doctor first before considering acupuncture. The perceived advantages of acupuncture over biomedicine were fewer side effects and permanent cure. The respondents did not accept receiving acupuncture and conventional medical treatments at the same time.

[Insert Table 5 about here]

Perceived risks of acupuncture

The respondents' perceptions of the risks of acupuncture are summarized in Table 6. All ten statements had mean scores significantly different from the 3.0 mid-point. The

highest average score of 3.9 was for the statement “With improper needle application, acupuncture can induce severe aftereffects”. Four statements had mean scores of 3.4 or above. Perceived risks related with the acupuncturists were higher than the perceived risks related with the acupuncture treatment. Many respondents seemed to doubt the professional qualifications and the application skills of acupuncturists. They were also confused about the kind of feeling expected during acupuncture treatment. The respondents did not generally agree that “Acupuncture is an invasive procedure, which can hurt the patient” or that “Acupuncture can only generate short-term effectiveness and the effect of the same treatment will wear off gradually”.

[Insert Table 6 about here]

Attitudes toward acupuncture among respondents with different prior experience

The number of respondents who had received acupuncture treatment but not TCM was very small so, as reported in the methodology section, the respondents were categorized into three groups based on their prior experience with TCM and acupuncture. The three groups were those received neither TCM nor acupuncture (No TCM-No AC), those who had used TCM but not acupuncture (TCM-no AC), and those who had received acupuncture regardless of whether or not they had used TCM treatment (AC).

A series of analyses of variance with the Tukey post hoc tests for honest and significant difference were conducted to find out whether attitudes towards acupuncture differed significantly among the three groups. Significant differences in attitude were found with respect to 18 of the 26 attitudinal statements. In general, those respondents with acupuncture experience had significantly different attitudes from those without prior

experience of TCM or acupuncture. Respondents with TCM experience but no acupuncture experience usually held attitudes between those of the other two groups.

Five of the six statements about acupuncture as a medical treatment had significant differences in mean scores among the three groups. Respondents with experience with acupuncture were more likely to believe acupuncture would be effective even when other medical treatment had failed. They were more likely to believe acupuncture can effect a permanent cure. They were also more likely to perceive acupuncture as being able to cure difficult and strange diseases.

Eight of the ten statements comparing acupuncture with biomedicine had significantly different mean scores among the three groups. Respondents without any experience of TCM or acupuncture demonstrated greater trust in biomedicine and its doctors. They were more likely to consult such doctors first. They were more likely to believe that biomedicine is better supported by scientific evidence and rigorous regulation.

Five of the ten statements about the perceived risks of acupuncture had significant differences in mean scores among the three groups. This indicates that the three groups were less diverse in terms of their perceptions of acupuncture's risks. Respondents without any experience of TCM or acupuncture were more likely to be affected by media reports about malpractice among acupuncturists. They also perceived the effectiveness of acupuncture as being exaggerated. Respondents with acupuncture experience were less likely to doubt the qualifications of acupuncturists.

Discussion

A study was conducted to measure public attitude toward acupuncture using 26

statements. The factor structure and the sequence of each factor reflected the problems to be solved and the measures to be taken for effective marketing of acupuncture in Hong Kong.

Respondents generally perceived acupuncture as secondary to biomedicine. Consumers in general did not have confidence in acupuncture. The lack of trust in acupuncture was attributed to many factors. The major concern was about the qualification and skills of acupuncturists. Respondents were unfamiliar with the professional qualifications of acupuncturists. They perceived that acupuncture practices are not standardized, and worried that acupuncture might not be able to accommodate individual differences in physique. Because of the insufficient trust in acupuncturists, they demonstrated a substantial fear of the bad consequence raised from malpractice in acupuncture. Respondents demonstrated high regards of biomedicine and biomedical doctors. They perceived that biomedicine and biomedical doctors were more rigorous and more scientific. In other words, acupuncture was considered as under-regulated and unstandardized medical treatment under Hong Kong's current professional regulatory system. Respondents reported that they would only resort to acupuncture when biomedicine had failed. This observation confirms that biomedicine is well-received and is perceived as superior and as the first-class option in medical treatment. This is understandable, as the statutory framework for TCM and acupuncture in Hong Kong has a history of less than 15 years. The study implies that for acupuncture to earn trust and recognition from the public, there is a need to build the reputation of the acupuncturists. Consumers need to be equipped with knowledge about the system of professional qualifications, the accreditation system, and the rules governing acupuncture practices.

The professional body responsible should consider funding a consumer educational program to inform the public about who is qualified to practice acupuncture and encourage them to consult qualified acupuncturists.

Reports of malpractice in the media were found to be very influential in hurting the reputation of acupuncture among the doubting public. The professional body responsible should take a proactive position to tackle such incidence. They should be prepared to explain to the public how they react to malpractice and how the practitioners involved will be subjected to penalty.

Many respondents reported that they were confused about what to expect in the treatment process. Specifically, they were not sure whether feeling pain is normal. This suggests that acupuncturists should discuss the possible sensations more clearly with their patients. They should help the patients identify sensations that are abnormal or alarming and respond appropriately to such reports.

Acupuncture was perceived as having fewer side effects and being useful for preventive care. It was perceived as effective in dealing with movement problems, pains and paralysis. These perceptions should be exploited in designing media messages to promote acupuncture. The messages should emphasize the therapy's perceived strengths and be aimed at those less willing to taking medicine, for example the elderly who have difficulty following a prescribed drug regime.

A final observation is that prior experience of TCM and acupuncture had significant impact on respondents' attitudes. Those who had prior experience of TCM or acupuncture had more positive attitudes. Promoting acupuncture in Hong Kong should aim at those who already have some experience with TCM. TCM practitioners can also

serve as opinion leaders to recommend their patients to try acupuncture treatment.

This study used a convenience sample recruited through personal networks, so the findings cannot automatically be generalized to the rest of the population, even within Hong Kong. Furthermore, the percentage of blue collar workers was small in the present study. Further studies may need to enlarge the research pool in broader working class and age. Further studies might usefully examine public attitudes toward acupuncture using probability sampling methods. The aims of the present study were to explore how consumers perceive acupuncture as a medical treatment and its risks in relation to biomedicine. Further studies can be conducted to develop a reliable and valid measurement scale for consumers' perceptions of and attitudes toward acupuncture. Exploratory and confirmatory factor analysis will be used to find the main factors and the measurement scale will be validated by a multitrait-multimethod (MTMM) approach (Campbell and Fiske, 1959) to assess convergent and discriminant validity in future studies. Further analysis can also use experiments designed to examine how consumers respond to publicity materials or advertisements using different appeals to promote acupuncture.

Conclusions

Lack of trust in acupuncturists and perceived inferiority of acupuncture to biomedicine were the major barriers of public's recognition of acupuncture. Respondents with no prior experience with traditional Chinese medicine or acupuncture tend to be more skeptical toward acupuncture than those who had prior experience with either TCM or acupuncture. Marketing of acupuncture in the region should focus on solutions to enhance the public

confidence in the medical treatment and the practitioners. Efforts need to be devoted to educate the public about the professional qualifications of acupuncturists and to disseminate scientific/clinical evidence of acupuncture treatment on a long-term basis. Acupuncture has the strength that it is perceived to enjoy the advantages of not involving taking medicine, having fewer side effects and being good for preventive care. Future marketing efforts should leverage on the perceived strength of acupuncture. Individuals with experience of TCM should be the prime target of the marketing efforts as they are more likely to be converted than those with no experience with TCM.

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Table 1 A profile of the respondents (N=879)

Demographics and medical experience	No.	Percentage
Female	486	44.6
Male	391	55.4
Aged 20–29	301	34.4
Aged 30–39	188	21.5
Aged 40–49	203	23.2
Aged 50 or above	184	21.0
Primary education or below	53	6.1
Secondary school	299	34.2
Post-secondary or university	521	59.7
Monthly household income at HK\$9,999 or below	88	10.1
HK\$10,000 – HK\$19,999	236	27.0
HK\$20,000 – HK\$39,999	334	38.2
HK\$40,000 or above	216	24.7
Public rental housing	226	25.9
Subsidised home ownership housing	190	21.7
Private rental housing	113	12.9
Private owned housing	327	37.4
Others	18	2.1
Blue-collar worker	68	7.8
White-collar worker	229	26.1
Professional or managerial employee	190	21.7
Student	218	24.9
Retiree	94	10.7
Other	77	8.8
Used acupuncture, previous 3 years		
Yes	245	28.0
No	631	72.0
Used TCM, previous 3 years		
Yes	587	67.0
No	289	33.0
Prior experience		
1: no TCM, no acupuncture	275	31.4
2: TCM, no acupuncture	356	40.7
3: acupuncture (with TCM or no TCM)	244	27.9

Table 2 Factor loadings of the six-factor solution

Factors and items	Factor loadings					
	1	2	3	4	5	6
Factor 1: trust in biomedicine						
Part 2: I trust biomedicine more than acupuncture	0.81	0.22	-0.15	0.01	0.00	0.01
Part 2: I trust doctors of biomedicine more than acupuncturists	0.81	0.21	-0.12	0.05	-0.03	-0.01
Part 2: Biomedicine is more scientific than acupuncture	0.71	0.09	0.06	0.17	0.02	0.08
Part 2: Rules governing biomedicine are more rigorous than acupuncture	0.65	0.16	0.13	0.21	-0.09	0.04
Part 2: In the event of illness, I would first consult biomedical doctors. Only when biomedicine fails, then I would consider acupuncture treatment	0.59	0.08	-0.05	0.16	0.29	-0.01
Factor 2: risks vs benefits						
Part 3: Acupuncture is an invasive procedure, which can hurt the patient	0.10	0.72	0.00	0.16	-0.03	-0.05
Part 3: Acupuncture can only generate short-term effectiveness and the effect of the same treatment will decline gradually	0.10	0.72	-0.12	-0.08	0.07	-0.16
Part 3: The effectiveness of acupuncture has been exaggerated. Expected results may not be achieved	0.21	0.69	-0.08	0.14	0.04	0.02
Part 3: The mass media reports about medical errors of acupuncture create great concern for me about acupuncture	0.22	0.58	0.05	0.06	0.10	0.41
Part 3: Acupuncture needles are reused. Patients are vulnerable to infection due to hygiene problems	0.10	0.58	0.05	0.41	-0.11	0.04
Part 3: Patients may feel pain with acupuncture treatments sometimes and it is confusing whether such painful feeling is normal	0.16	0.51	0.02	0.10	0.15	0.19
Part 1: Acupuncture is not applicable to common illnesses, such as colds, flu, etc.	0.15	0.40	0.16	-0.01	0.24	-0.38
Factor 3: cure and effectiveness of acupuncture						

Part 1: Even when other medical treatment fails, acupuncture is able to cure the disease	-0.02	0.05	0.76	-0.02	-0.05	-0.10
Part 1: Acupuncture can effect a permanent cure	-0.02	-0.08	0.70	0.03	0.08	0.12
Part 1: Acupuncture is an alternative medical treatment that can cure difficult and strange diseases	0.11	0.15	0.62	0.01	0.10	-0.20
Part 1: Acupuncture is a medical treatment that does not involve taking medicine	-0.03	-0.04	0.58	0.13	0.07	-0.12
Part 2: Compared with biomedicine, acupuncture can better effect a permanent cure	-0.17	-0.12	0.51	0.06	0.40	0.04
Part 1: Acupuncture is useful for preventive care	-0.03	-0.08	0.50	-0.13	0.01	0.31
Factor 4: qualification and skills of acupuncturists						
Part 3: Acupuncturists' needle application skills are not standardized. Expected treatment results may not be achieved	0.09	0.04	0.09	0.75	0.09	0.07
Part 3: Professional qualifications of acupuncturists are ambiguous and the general public can be confused	0.18	0.11	-0.07	0.74	0.01	0.09
Part 3: Acupuncturists may not be able to accurately apply the needle every time as body structures of patients are different and the acupuncture points may be different for different patients	0.19	0.26	0.04	0.61	-0.01	0.00
Factor 5: side effects and costs						
Part 2: Acupuncture has fewer side effects than biomedicine	-0.15	-0.22	0.18	0.20	0.58	0.01
Part 2: Acupuncture treatment costs more than biomedicine	0.13	0.15	0.00	-0.04	0.56	0.16
Part 2: One should not receive acupuncture treatment when undergoing biomedical treatment	0.32	0.21	0.03	-0.01	0.50	-0.04
Part 2: Acupuncture cures faster than biomedicine	-0.16	0.18	0.24	-0.08	0.43	-0.30
Factor 6: severe aftereffects						
Part 3: With improper needle application, acupuncture can induce severe aftereffects	0.06	0.13	-0.06	0.17	0.12	0.74

Eigenvalue	3.05	3.02	2.52	1.93	1.48	1.23
% variance	11.74	11.63	9.68	7.42	5.69	4.75
Total variance						50.90

Notes. Boldface indicates highest factor loadings.

Table 3 Perceptions of acupuncture as a medical treatment by prior experience

Items	Mean	SD	Prior experience			F-value
			No TCM, No AC	TCM No AC	AC	
			a	b	c	
Acupuncture is a medical treatment that does not involve taking medicine	3.4	1.0	3.2 ^c	3.4	3.5 ^a	6.1**
Acupuncture is useful for preventive care	3.4	0.9	3.3 ^c	3.4	3.5 ^a	3.9*
Acupuncture can effect a permanent cure	3.3	0.8	3.1 ^c	3.3	3.4 ^a	4.9**
Acupuncture is an alternative medical treatment that can cure difficult and strange diseases	3.2	1.0	3.0 ^c	3.1 ^c	3.3 ^{ab}	4.8**
Even when other medical treatment fails, acupuncture is able to cure the disease	3.0	0.9	2.9 ^c	3.0 ^a	3.2 ^a	9.0***
Acupuncture is not applicable to common illnesses, such as colds, flu, etc.	2.9	1.0	3.0	2.9	2.9	0.8

Responses on a 5-point scale with 5 =Strongly agree; 1 = Strongly disagree

indicates significance at the $p \leq 0.05$ ($p \leq 0.01$; *** $p < .001$) level of confidence*

TCM=Traditional Chinese Medicine; AC=Acupuncture

Superscripts indicate differences between groups using Tukey HSD paired comparison tests with a $p \leq 0.05$ confidence level, where a means No TCM No AC, b means TCM No AC, and c means experience with AC

Table 4 Illnesses perceived as dealt with effectively by acupuncture

Illnesses	Percentage
Problems with movement, such as joint pain and hand/leg movement problems	83.6
Various type of pain	76.7
Nerve paralysis	65.6
Insomnia and other sleeping problems	53.1
Stroke	45.4
Female diseases, such as menstrual pain and infertility	30.8
Various allergies, such as allergic rhinitis and skin irritations	26.6
Chronic diseases requiring long-term treatment, such as diabetes, kidney disease and heart disease	23.8
Alzheimer's disease	14.6
Autism	8.1
Others	0.2

Table 5 Perceptions of acupuncture and biomedicine by prior experience

Items	Mean	SD	Prior experience			F-value
			No TCM, No AC	TCM No AC	AC	
			a	b	c	
Acupuncture has fewer side effects than biomedicine	3.6	0.9	3.6	3.6	3.7	0.9
Biomedicine is more scientific than acupuncture	3.6	0.9	3.8 ^{bc}	3.6 ^{ac}	3.3 ^{ab}	15.9***
In the event of illness, I would first consult biomedical doctors. Only when biomedicine fails, then I would consider acupuncture treatment	3.6	1.0	3.8 ^{bc}	3.5 ^{ac}	3.3 ^{ab}	18.8***
Rules governing biomedicine are more rigorous than acupuncture	3.5	0.9	3.7 ^{bc}	3.5 ^a	3.3 ^a	7.9***
I trust doctors of biomedicine more than acupuncturists	3.3	0.9	3.6 ^{bc}	3.3 ^{ac}	3.0 ^{ab}	34.0***
I trust biomedicine more than acupuncture	3.3	1.0	3.6 ^{bc}	3.3 ^{ac}	2.9 ^{ab}	44.7***
Compared with biomedicine, acupuncture can better effect a permanent cure	3.2	0.8	3.0 ^{bc}	3.2 ^{ac}	3.4 ^{ab}	11.2***
Acupuncture treatment costs more than biomedicine	3.1	0.8	3.2	3.1	3.1	1.1
One should not receive acupuncture treatment when undergoing biomedical treatment	3.1	1.0	3.2 ^c	3.1	3.0 ^a	4.3*
Acupuncture cures faster than biomedicine	2.7	0.8	2.6 ^c	2.6 ^c	2.8 ^a	5.3**

Responses on a 5-point scale with 5 =Strongly agree; 1 = Strongly disagree

* indicates significance at the $p \leq 0.05$ (** $p \leq 0.01$; *** $p < .001$) level of confidence

TCM=Traditional Chinese Medicine; AC=Acupuncture

Superscripts indicate differences between groups using a Tukey HSD paired comparison test with a $p \leq 0.05$ confidence level, where a means No TCM No AC, b means TCM No AC, and c means experience with AC

Table 6 Perceived risks of acupuncture by prior experience

Items	Mean	SD	Prior experience			F-value
			No TCM, No AC a	TCM No AC b	AC c	
With improper needle application, acupuncture can induce severe aftereffects	3.9	0.8	4.0	3.9	3.9	1.5
Professional qualifications of acupuncturists are ambiguous and the general public can be confused	3.8	0.8	3.9 ^c	3.9 ^c	3.6 ^a	9.0***
Acupuncturists' needle application skills are not standardized. Expected treatment results may not be achieved	3.8	0.8	3.8	3.8	3.8	0.3
Acupuncturists may not be able to accurately apply the needle every time as body structures of patients are different and the acupuncture points may be different for different patients	3.6	0.8	3.7	3.6	3.5	1.7
Patients may feel pain with acupuncture treatments sometimes and it is confusing whether such painful feeling is normal	3.4	0.8	3.4	3.4	3.3	1.9
Acupuncture needles are reused. Patients are vulnerable to infection due to hygiene problems	3.3	1.0	3.4 ^c	3.4 ^c	3.2 ^{ab}	4.9**
The mass media reports about medical errors of acupuncture create great concern for me about acupuncture	3.1	0.9	3.3 ^c	3.2 ^c	2.9 ^{ab}	9.7***
The effectiveness of acupuncture has been exaggerated. Expected results may not be achieved	3.1	0.8	3.2 ^{bc}	3.1 ^a	2.9 ^a	10.1***
Acupuncture is an invasive procedure, which can hurt the patient	2.9	0.9	3.0	2.9	2.8	2.5

Acupuncture can only generate short-term effectiveness and the effect of the same treatment will decline gradually	2.7	0.8	2.8 ^b	2.6 ^a	2.7	4.4*
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Responses on a 5-point scale with 5 =Strongly agree; 1 = Strongly disagree

** indicates significance at the $p \leq 0.05$ (** $p \leq 0.01$; *** $p < .001$) level of confidence*

TCM=Traditional Chinese Medicine; AC=Acupuncture

Superscripts indicate differences between groups using a Tukey HSD paired comparison test with a $p \leq 0.05$ confidence level

a means No TCM No AC, b means TCM No AC, and c means experience with AC