

Knowledge and Attitudes of Internists Compared to Medical Students Regarding Acupuncture

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Key words: acupuncture, medical students, internists, medical education, complementary medicine

Abstract

Background: Acupuncture and public interest in this modality have increased over recent years in Israel and throughout the western world.

Objectives: To compare the knowledge and attitudes of physicians to medical students with regard to acupuncture.

Methods: An anonymous questionnaire was completed by internists and medical students at the Soroka Medical Center.

Results: There were 122 respondents in all, 57 of them women (46.7%). The study sample included 40 physicians (33%), 39 fifth year medical students (32%) and 43 second year medical students (35%). The majority of participants (93.4%) had never received training in acupuncture and 84.4% had never undergone acupuncture therapy themselves. In these variables there were no significant differences between the physicians and the students. The participants' level of knowledge of acupuncture was very low, with 40% unable to answer even one question (of eight) correctly. Despite the poor level of knowledge and the lack of personal exposure to acupuncture, 90 participants (74%) believed that acupuncture has more than a placebo effect, and 57 (42%) believed it was important to include acupuncture in medical education. There were no statistically significant differences in the attitudes of physicians and medical students to acupuncture.

Conclusions: The level of knowledge and exposure of physicians and medical students to acupuncture is low. However, both groups have relatively positive attitudes to this modality as an acceptable treatment for health problems and were open to its inclusion in the medical school curriculum.

IMAJ 2008;10:219–223

Complementary medicine involves techniques and treatments beyond those of conventional medicine. Its aim is to diagnose and treat medical problems and maintain health [1]. It represents a form of complementary cure and is not an alternative to conventional medicine. Patients who turn to complementary medicine expect the therapist to show a personal interest and understanding, to take responsibility for the patient's health, and to provide holistic therapy in the broadest sense of mind-body-world [1].

Public interest in and use of complementary medicine services have increased in Israel [1,2] and the western world

[3,4] since the 1990s. A nationwide telephone survey conducted in the United States [4] showed that 34% of 1539 participants had used complementary medicine services in the previous year. In 1990, residents of the U.S. paid about 425 million visits to complementary practitioners (compared with 338 million visits to primary care physicians in the same period). Total expenditures by Americans for non-conventional medicine were estimated for that year to be 13.7 billion dollars [4]. The popularity of complementary medicine in Israel is reflected in the opening of complementary medicine clinics by the health management organizations. Clalit Health Services, the largest HMO in Israel, which cares for about 54% of the Israeli population, runs about 40 clinics for complementary medicine throughout the country.

One of the more prominent treatments in complementary medicine is acupuncture. Acupuncture is a Chinese method of treatment whose roots date back 2500 years or more. The precise mechanism of action of acupuncture is not fully understood, but one of the possible mechanisms is the release of chemicals such as endorphins and enkephalins which inhibit pain and generate a feeling of relaxation. In the U.S. acupuncture is used to treat a broad spectrum of urgent but not life-threatening conditions as well as chronic conditions for which conventional medicine has not proved helpful [5]. There is evidence to date that acupuncture is effective in the treatment of chronic headache [6], osteoarthritis, rehabilitation following stroke, low back pain, and other pain syndromes [5]. A recent study conducted in a complementary health care clinic of the Clalit Health Services in Beer Sheva showed that acupuncture was the preferred treatment among the various complementary medicine options [7]. Acupuncture was also the most frequently used method of complementary medicine among patients attending a rheumatology clinic in Israel [8]. A study conducted in southwest England showed that most doctors who worked in the field of complementary medicine practiced acupuncture [9]. Studies conducted among medical students have also shown that acupuncture was considered to be the most effective technique in complementary medicine [10,11].

Studies around the world have demonstrated that family physicians express an interest in complementary medicine and refer patients to it. In most cases the referrals are based on patient

* The first author's involvement in the study is part of the requirements for the MD degree at the Ben-Gurion University Faculty of Health Sciences.

HMO = health management organization

request and only in the minority on the physician's initiative [12,13]. A study from Israel showed that the majority of participating family physicians considered complementary medicine to be a legitimate form of therapy [14].

To our knowledge no studies to date have investigated the knowledge and attitudes relating to a specific type of complementary medicine such as acupuncture, nor has a comparison of attitudes towards this therapy between medical students and physicians been reported. The present study is an attempt to rectify this situation.

Subjects and Methods

The study population comprised residents and specialists in internal medicine at the Soroka Medical Center and medical students from Ben-Gurion University of the Negev who were either in their preclinical years (2nd year) or who had already completed their clerkship in internal medicine (5th year).

The study instrument was a questionnaire that included demographic data, knowledge on and attitudes towards acupuncture. The anonymous questionnaires were completed by 43 second-year students (64% response rate), 39 fifth year students (54% response rate), and 40 internists (56% response rate). Twenty-four of the physicians were residents and 16 were board-certified in internal medicine. The data collection continued from January 2006 to July 2006.

Statistical analysis

Univariate analyses were done by chi-square and *t*-tests. Statistical significance was set at $P < 0.05$, throughout.

Results

Sociodemographic characteristics

The 122 study participants (58% response rate) included 57 women (46.7%) and 65 men (53.3%). Eighty-five (70.8%) were born in Israel. The majority of participants (93.4%) had never received training in acupuncture and 84.4% had never undergone acupuncture therapy themselves. In these variables there were no significant differences between the physicians and the students. The sociodemographic characteristics of the study participants are shown in Table 1.

Knowledge on acupuncture

Forty-nine participants (40%) did not answer a single question of the eight knowledge questions correctly. No participant answered all eight questions correctly. Only two (2%) answered seven correctly [Table 2]. The mean score was 14.8 ± 17.9 (SD) for the 2nd year students, 17.3 ± 21.0 for the 5th years students, and 19.7 ± 20.4 for the internists. There were no statistically significant differences within the group in knowledge on acupuncture.

Comparison of attitudes between men and women

Forty-three (36%) of the study participants agreed or strongly agreed that acupuncture could be as effective as monotherapy for medical problems. Forty-nine (40%) agreed or strongly agreed that they would recommend acupuncture to their patients for

Table 1. Sociodemographic characteristics of the study population

	Results
Age (mean \pm SD) (N=119)	30.3 \pm 9.6
Gender (N=122)	
Male	65 (53.3%)
Female	57 (46.7%)
Total	122
Country of birth	
Israel	85 (70.8%)
Other	35 (29.2%)
Total	120
Years in Israel (mean \pm SD) (N=34)	17.1 \pm 9.8
Professional status	
2nd yr student	43 (35%)
5th yr student	39 (32%)
Internist	40 (33%)
Total	122
Country of medical studies	
Israel	17 (43.6)
Former Soviet Union	11 (28.2)
Other	11 (28.2)
Total	39
Training in acupuncture	
No	114 (93.4%)
In medical education	3 (2.5%)
In residency program	0
Privately	0
Other	0
Underwent acupuncture personally	
No	103 (84.4%)
In the last year	3 (2.5%)
More than 1 year ago	16 (13.1%)

medical problems. Forty-eight (40%) agreed or strongly agreed that acupuncture should be included in the basket of medical services. Details on the attitudes of the participants are given in Table 3.

Fewer women than men agreed that acupuncture is effective as monotherapy for medical problems. Only 13 women (22.8%) agreed or strongly agreed compared to 30 men (46.9%) ($P = 0.006$). There was also a significant difference between women and men on the question of whether acupuncture could represent a threat to public health. Fifty-six women (98.2%) disagreed or strongly disagreed with this position compared to 56 men (88.9%) ($P = 0.04$). There were no other significant differences between men and women on any of the attitude questions.

Comparison of attitudes by professional status

There was a statistically significant difference among board-certified internists, residents in internal medicine and medical students on the issue of recommending acupuncture to patients for the treatment of medical problems. While 38 of the students (47.5%) agreed or strongly agreed with this recommendation, only 9 residents (35.5%) and only 2 board-certified internists (12.6%) did ($P = 0.03$).

Table 2. Knowledge on acupuncture

Question	N (%)
Which of the following is a contraindication to acupuncture?	
Correct answer	18 (15)
Incorrect answer	32 (26)
Did not know	72 (59)
How many meridians are there in the human body in accordance with acupuncture?	
Correct answer	23 (19)
Incorrect answer	21 (17)
Did not know	78 (64)
Which organ is the acupuncture point located on the back of the hand between the base of the thumb and the middle finger responsible for?	
Correct answer	23 (19)
Incorrect answer	9 (7)
Did not know	90 (74)
A woman who complains of constipation, premenstrual pain, recurrent headaches in the right temple, and an obsession for cleanliness is defined by Chinese medicine as suffering from?	
Correct answer	6 (5)
Incorrect answer	14 (11)
Did not know	102 (84)
The term sham acupuncture refers to?	
Correct answer	14 (11)
Incorrect answer	12 (10)
Did not know	96 (79)
How many years of training are required in Israel to become a therapist in Chinese medicine?	
Correct answer	24 (20)
Incorrect answer	30 (25)
Did not know	68 (56)
What are the diagnostic methods of Chinese medicine?	
Correct answer	26 (21)
Incorrect answer	11 (9)
Did not know	81 (66)
How long does a typical acupuncture session last?	
Correct answer	34 (28)
Incorrect answer	11 (9)
Did not know	77 (63)

There was also a statistically significant difference among internists and 2nd and 5th year students in attitude toward introduction of acupuncture into the hospital. Thirty-five internists (87.5%) either disagreed with this policy or only mildly agreed with it compared to 22 fifth year students (56.4%) and 37 second year students (86%) ($P = 0.01$). There were no other statistically significant differences by professional status regarding attitudes to acupuncture.

Discussion

In recent years there has been a significant increase in the use of complementary medical services in Israel and throughout the world. Conventional medicine physicians have to cope with the popularity of complementary medicine without the knowledge or tools to do so [15,16].

Acupuncture is one of the leading techniques in the field of complementary medicine. In recent years research has pro-

Table 3. Attitudes to acupuncture

Question	N (%)
Acupuncture can serve as monotherapy for medical problems	
Do not agree/agree somewhat	78 (64)
Agree/agree strongly	43 (36)
It is important to integrate acupuncture into the medical school curriculum	
Do not agree/agree somewhat	70 (58)
Agree/agree strongly	52 (42)
I would recommend acupuncture to my patients for treatment of medical problems	
Do not agree/agree somewhat	71 (60)
Agree/agree strongly	49 (40)
The primary effect of acupuncture is placebo	
Do not agree/agree somewhat	90 (74)
Agree/agree strongly	31 (26)
Acupuncturists should have to be licensed by the Ministry of Health	
Do not agree/agree somewhat	11 (8)
Agree/agree strongly	111 (92)
Acupuncture should be included in the basket of health services	
Do not agree/agree somewhat	74 (60)
Agree/agree strongly	48 (40)
Acupuncture should be integrated into care in primary care clinics	
Do not agree/agree somewhat	60 (49)
Agree/agree strongly	62 (51)
Acupuncture should be integrated into care in hospital wards	
Do not agree/agree somewhat	94 (77)
Agree/agree strongly	28 (23)

vided increasing evidence of its effectiveness. The results of a meta-analysis of 33 randomized controlled trials showed that acupuncture was significantly more effective than sham acupuncture for the treatment of low back pain [17]. Other randomized controlled trials demonstrated that acupuncture was significantly more effective in the treatment of chronic headache than usual medical treatment [5], and that acupuncture significantly relieved pain and rigidity and improved physical function compared to sham acupuncture methods [18].

The aim of the present study was to assess the knowledge of physicians and medical students to acupuncture and to compare the attitudes of board-certified internists and residents in internal medicine to those of medical students.

The results show that exposure of the study participants to the subject of acupuncture is minimal. Only eight participants (6.6%) had received any type of training relating to acupuncture and only 19 (15.6%) had undergone acupuncture therapy themselves. This low level of exposure to acupuncture explains, at least in part, the lack of knowledge on this subject among physicians and students. Forty percent of the participants got all of the knowledge questions wrong, without any difference by professional status. These findings are consistent with those of another study conducted in Israel in which the knowledge of family physicians relating to complementary medicine techniques was minimal [19]. In that study 57% of the participants answered all the questions on complementary medicine, including acupuncture, incorrectly. A study of American medical students showed that 89% thought that complementary medicine techniques could be helpful to

conventional medicine, but most of them did not have sufficient knowledge about complementary medicine [9].

Despite the lack of knowledge, 52 of the participants in the present study (42%) believed that it was important to include teaching on acupuncture in the formal curriculum of the medical school. Similarly, in a study from the USA 43% thought that complementary medicine should be included in the medical school curriculum [10]. In an Israeli study 79% of the participating students were interested in studying complementary or alternative medicine in the medical school [20]. In a paper published in this journal (*IMAJ*) the authors called for the inclusion of complementary medicine in medical education [21]. The aim of the course would not be to turn the students into complementary medicine therapists but to provide them with sufficient knowledge to relate to the needs of patients who use complementary medical services. An interesting point in the results of the present study is that not only the students thought that acupuncture should be included in the medical school curriculum, but 35% of the internists as well.

Despite the low levels of knowledge and exposure, the attitude to acupuncture was generally positive. Ninety participants (74%) did not agree or agreed mildly that the effect was primarily placebo. In a study conducted in Holland in the 1980s [13] only 21% of family physicians who took part disagreed with a similar statement while 47% of the study participants strongly agreed. In another study among medical students in the U.S. [11] the attitudes were more positive, with 37% of the participants not agreeing at all that the effect was placebo and only 28% strongly agreeing with this position. A similar gap can be seen between these two studies and our study regarding the contention that acupuncture is a threat to public health. It should be noted that the other two studies related to complementary medicine on the whole and not specifically to acupuncture. In our study the vast majority (92%) did not agree with this contention compared to only 41% in the Dutch study and 65% among American medical students. There are two possible explanations for this discrepancy in attitudes. First, acupuncture is perceived as one of the more effective forms of complementary medicine therapy [9-11] so that when physicians and medical students were asked specifically about acupuncture their attitudes were more positive. Second, in the two decades that have passed since the Dutch study was conducted physician awareness of complementary medicine has increased and their attitudes have become more positive.

Fewer women than men agreed that acupuncture is effective as monotherapy for medical problems. There was also a significant difference between women and men on the question of whether acupuncture might represent a threat to public health. In other words, compared to men relatively more women perceived acupuncture as ineffective but also harmless. In a study that assessed the attitudes to complementary medicine among professional health care providers who practiced oncology in Norway [22], women had a more positive attitude than men. We do not have an explanation for our findings, which should be further elucidated in studies that specifically address gender differences.

In contrast to the study hypotheses, there were no significant differences in attitudes towards acupuncture between internists and medical students. The reason for this could be that acupuncture, in particular, is perceived as an effective therapeutic modality, hence the positive attitude of physicians and not just medical students to acupuncture. It is also possible that the increasing popularity of complementary medicine led physicians to change their attitude.

In two items we did find significant differences between internists and medical students. Only 12.5% of the board-certified internists declared that they would refer their patients to acupuncture for medical problems compared to 37.5% of the residents in internal medicine and 47.5% of the medical students. A study conducted among family physicians in Israel [19] yielded very different findings. In that study 63% of the physicians referred their patients for acupuncture at their own initiative, 29% at the request of the patients, and only 8% were not prepared to refer their patients for acupuncture under any circumstances. Apparently family physicians are still more receptive to complementary medicine in general and to acupuncture in particular than board-certified internists. However, the responses of the residents in internal medicine, and even more so the medical students, shows an increasing readiness to refer patients for acupuncture. In other words, younger physicians are more prepared to integrate acupuncture with conventional medicine. This can be seen in the additional significant difference between the students and the physicians. Only 12.5% of the internists agreed that acupuncture should be included as therapy in the hospital ward compared with 43.6% of 5th year medical students. Clearly, students were also open to the integration of complementary medicine with conventional medicine to a greater degree than physicians. In this respect it is interesting that the 2nd year medical students took a similar position to the physicians in that only 14% of them favored this step. It is possible that the 5th year students' clinical exposure was the reason for their more positive attitude to the introduction of acupuncture into hospital wards.

The response rate for this study was 58%, with no significant difference between the study groups. This relatively high response rate was achieved by collecting data with a short questionnaire that carried the logo of the university medical center [23]. The participants agreed to respond despite their tight work or study schedules.

This study has several limitations. The data were collected in one medical center and do not necessarily reflect other regions in Israel. In addition, 2nd year medical students represented the pre-clinical years and 5th year students the clinical years, but there was no overall representation of the entire body of medical students. Moreover, we chose the internists by chance. It is reasonable to assume that other multidisciplinary populations might have yielded different results.

Despite the above, we believe that the results of the present study will add to the understanding and attitudes concerning acupuncture. These results, taken together with a growing body of evidence on the effectiveness of acupuncture in a spectrum of

medical conditions, can help in the integration of acupuncture into medical education for students and continuing medical education for physicians.

References

- Kaufman M, Hermoni D, Kitai E. Complementary or alternative medicine. *Harefuah* 1996;131:46–50 (Hebrew).
- Kitai E, Vinker S, Sandiuk A, Hornik O, Zeltzer C, Gaver A. Use of complementary medicine among primary care patients. *Fam Pract* 1998;15:411–14.
- Zollman C, Vickers A. ABC of complementary medicine. Complementary medicine and the patient. *BMJ* 1999;319:1486–9.
- Eisenberg DM, Kessler RC, Foster C, Norlock FE, Calkins DR, Delbanco TL. Unconventional medicine in the United States. Prevalence, costs, and patterns of use. *N Engl J Med* 1993;328:246–52.
- Tireny LW, McPhee SJ, Papadakis MA. Current Medical Diagnosis and Treatment (CMDT). San Francisco: Lange Medical Books/McGraw Hill, 2003.
- Vickers AJ, Rees RW, Zollman CE, et al. Acupuncture for chronic headache in primary care: a large, pragmatic, randomised trial. *BMJ* 2004;328:744.
- Soffer T, Press Y, Peleg A, Friger M, Ganel U, Peleg R. Characteristics of patients at a complementary medicine clinic in Beer Sheva: summary of the first two years of operation. *IMAJ* 2001;3:584–8.
- Breuer GS, Orbach H, Elkayam O, et al. Use of complementary and alternative medicine among patients attending rheumatology clinics in Israel. *IMAJ* 2006;8:184–7.
- White AR, Resch KL, Ernst E. Complementary medicine: use and attitudes among GPs. *Fam Pract* 1997;14:302–6.
- Derr S, Shaikh U, Rosen A, Guadagnino P. Medical students' attitudes toward, knowledge of, and experience with complementary medicine therapies. *Acad Med* 1998;73:1020.
- Chez RA, Jonas WB, Crawford C. A survey of medical students' opinions about complementary and alternative medicine. *Am J Obstet Gynecol* 2001;185:754–7.
- Marshall RJ, Gee R, Israel M, et al. The use of alternative therapies by Auckland general practitioners. *N Z Med J* 1990;103:213–15.
- Visser GJ, Peters L. Alternative medicine and general practitioners in The Netherlands: towards acceptance and integration. *Fam Pract* 1990;7:227–32.
- Bernstein JH, Shuval JT. Nonconventional medicine in Israel: consultation patterns of the Israeli population and attitudes of primary care physicians. *Soc Sci Med* 1997;44:1341–8.
- Glick S. CAM – image vs. reality: a personal perspective. *IMAJ* 2005;7:604–6.
- Grossman E. Complementary and alternative medicine: the facts. *IMAJ* 2005;7:602–3.
- Manheimer E, White A, Berman B, Forsys K, Ernst E. Meta-analysis: acupuncture for low back pain. *Ann Intern Med* 2005;142:651–63.
- Vas J, Mendez C, Perea-Milla E, et al. Acupuncture as a complementary therapy to the pharmacological treatment of osteoarthritis of the knee: randomised controlled trial. *BMJ* 2004;329:1216.
- Vinker S, Nakar S, Amir N, Lustman A, Weingarten M. Family practitioners' knowledge and attitudes towards various fields of non-conventional medicine. *Harefuah* 2002;141:883–7, 930 (Hebrew).
- Oberbaum M, Notzer N, Abramowitz R, Branski D. Attitude of medical students to the introduction of complementary medicine into the medical curriculum in Israel. *IMAJ* 2001;5:139–42.
- Oberbaum M, Shuval J, Haramati A, et al. CAM in medical education: has the time come? *IMAJ* 2005;7:607–10.
- Risberg T, Kolstad A, Bremnes Y, et al. Knowledge of and attitudes toward complementary and alternative therapies; a national multicentre study of oncology professionals in Norway. *Eur J Cancer* 2004;40:529–35.
- Smeeth L, Fletcher AE. Improving the response rates to questionnaires. *BMJ* 2002;324:1168–9.

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