

ARTIGO ORIGINAL

**INTRODUCING ACUPUNCTURE TO ALLOPATHIC MEDICAL STUDENTS: A SURVEY OF THEIR ATTITUDES AND BELIEFS.**

***INTRODUZINDO A ACUPUNTURA PARA ESTUDANTES DE MEDICINA ALOPÁTICA: UM ESTUDO DE SUAS ATITUDES E CRENÇAS.***

**ABSTRACT**

This prospective cross-sectional self-administered survey study was conducted to establish a baseline of familiarity, attitudes and beliefs with acupuncture learning and practice among Federal University of Ceará (Brazil) medical students. Students were evaluated before (Group B) and after their exposure to Acupuncture classes (Group A). A total of 47 participants filled in a 3-page 40-item questionnaire comprising various sections that dealt with their attitudes, beliefs, and experiences with acupuncture medical curricula and practice. Almost 50% of our students did not agree that Acupuncture should be included as a regular discipline in the medical curriculum. “*There is no evidence that Acupuncture is effective*” received positive response from most students (Group A: 45.7% and Group B : 83,3%). “*Only medical doctors should be allowed to practice acupuncture*” was disapproved by all. Most students have demonstrated ignorance of the advantages of therapeutic effects of acupuncture and have manifested against its deployment in the national health system. We concluded that despite the growing interest of our medical students in participating in the optional course “Introduction to Medical Acupuncture” there is some opposition to its inclusion in the regular medical curriculum. In addition, students are unaware of the benefits and effectiveness of acupuncture in the treatment of many diseases.

**KEY-WORDS**

*Complementary Therapies.  
Acupuncture. Surveys.  
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## RESUMO

Este estudo prospectivo transversal auto-administrado foi realizado para estabelecer uma base de conhecimento das atitudes e crenças com a aprendizagem e a prática da acupuntura entre os estudantes de medicina da Universidade Federal do Ceará (Brasil). Os alunos foram avaliados antes (grupo B) e após a sua exposição às aulas de acupuntura (grupo A). Um total de 47 participantes preencheu um questionário de 40-itens, 3-páginas, composto por várias seções que tratam de suas atitudes, crenças e experiências com as práticas e os currículos de escolas médicas que incluem a acupuntura na sua lista de ofertas. Quase 50% dos estudantes avaliados não concordaram com a inclusão do ensino de acupuntura como disciplina regular no currículo médico. A assertiva “Não há nenhuma evidência que a acupuntura seja eficaz” recebeu resposta positiva da maioria dos alunos (grupo A: 45,7% e grupo B: 83,3%). A assertiva “Apenas os médicos devem ser autorizados à prática acupuntura” foi desaprovada por todos. A maioria dos estudantes têm demonstrado desconhecimento das vantagens dos efeitos terapêuticos da acupuntura e se manifestaram contra a sua implantação no sistema nacional de saúde. Concluímos que, apesar do crescente interesse de nossos estudantes de medicina em participar na disciplina opcional de “Introdução à acupuntura médica”, há resistência à sua implantação no currículo médico regular. Além disso, os alunos desconhecem os benefícios e a eficácia da acupuntura no tratamento de um grande número de doenças.

**Palavras-chave:** Terapias complementares. Acupuntura. Coleta de Dados Educação Médica.

## INTRODUCTION

Acupuncture was recognized as a medical specialty in Brazil since 1995,<sup>1</sup> arousing the interest of a significant and growing number of doctors. Given this evidence, medical schools should provide to their graduate students the basic knowledge of the acupuncture theory, scientific evidence and the therapeutic approaches employed by this peculiar form of treatment, enabling them to clarify doubts and assist the choice of treatment options for their patients. Research conducted with British, Canadian and American students have found an important contingent of these students interested in learning about Complementary/alternative medicine (CAM) topics.<sup>2-4</sup>

The National Center for Complementary and Alternative Medicine (NCCAM)<sup>5</sup> defines CAM as

“a group of diverse medical and health care systems, practices, and products that are not generally considered part of. Conventional medicine. medical and health care systems, practices, and products that are not generally considered part of. Conventional medicine (also called Western or allopathic medicine) is medicine practiced by holders of M.D. (medical doctor) and D.O. (doctor of osteopathy) degrees and by allied professionals such as physical therapists, psychologists and registered nurses”.

Exemples of CAM practices include meditation, acupuncture, deep-breathing exercises, hypnotherapy, progressive relaxation, and tai chi.<sup>5</sup>

Traditional Chinese Medicine (TCM) is a complete medical system that has been used to diagnose, treat, and prevent illnesses for more than 2,000 years. Practices used in TCM include acupuncture and acupressure, moxibustion (burning an herb near the skin), herbal medicine, nutrition, tui na (chinese massage) tai chi and qi gong (chinese exercises).<sup>6</sup> Despite the growing world interest in the study and practice of TCM, Acupuncture, one of its most widespread procedures, is not included in the curricula of most medical schools, thus depriving the medical students of the basic precepts of clinical experience and scientific research within that area, prompting criticism and prejudices that are perpetuated mostly by lack of information. At our school the teaching of acupuncture was offered for the first time, as optional discipline (Introduction to Medical Acupuncture), in 2006 and soon aroused the interest of students who filled the 40 vacancies offered.

At that time we wondered what were the perceptions of Brazilian medical students regarding the

inclusion of acupuncture in the medical curriculum. Do they consider acupuncture a valid therapeutic tool or is it just a temporary fashion? What is their perception concerning the risks and complications of needles insertion in humans? These are the main questions that motivated the present study.

## METHOD

### Participants

A total of 47 participants filled in an 3-page 40-item questionnaire comprising various sections that dealt with their attitudes, beliefs, and experiences with acupuncture medical curricula and practice. If they consented to participation they completed the anonymous survey and returned it to a sealed box prior to exiting the classroom.

There were 20 males and 27 females and the study was conducted in three instances. The first study (Group A1) was carried out in December 2007 and included 19 3<sup>rd</sup> year medical students (Federal University of Ceará) A second study (Group A2) was conducted two years later and included 16 students from 3<sup>rd</sup> year. Groups A1 and A2 included students that had just attended the elective discipline of "Introduction to Medical Acupuncture". Group B served as control and included 12 students from the third year just before attending the discipline of Acupuncture.

### Questionnaire

The questionnaire was based largely on that of Furnham and McGill<sup>7</sup> study that compared health beliefs of medical students from two different medical schools and at different stages of their medical training (first and third years). The 43- item questionnaire was reduced to 40 questions. Questions were reformulated so as to exclude general complementary and alternative medicine (CAM) questions and in order to contain only questions related to acupuncture. The 40 attitude and perception items used a 5-point Likert rating scale. The questions were not grouped by topics during the application of the questionnaire. However during tabulation of the results, the questionnaire was broken down into five sections:

A. *Medical practice of Acupuncture* - This consisted of 9 statements about acupuncture practice in general. Questions examined who can practice acupuncture, how doctors who practice acupuncture are seen by his colleagues, some emotional characteristics of the medical practitioners of acupuncture, women's preference for acupuncture practice, how effective is the training of practitioners of acupuncture and if there is the need of special talents to be an Acupuncturist.

B. *The teaching of Acupuncture* - This section consisted in 6 statements dealing with topics related to medical curricula and others aspects of learning.

C. *The effectiveness of acupuncture* - Fourteen statements defining the effectiveness of Acupuncture treatments.

D. *Complications of Acupuncture treatments* - Three statements related to complication of the use of Acupuncture

E. *Benefits of the Acupuncture Treatment* - Eight statements emphasizing the benefits of this modality of treatment.

### Data analysis

Survey data analysis was entered into an Excel spreadsheet (Microsoft Office® 2007). Descriptive statistics were used to summarize the data. Likert responses were grouped into two categories: responses with any degree of agreement were grouped together as positive responses (+), while all responses with any degree of disagreement were grouped together as negative responses (-).

## RESULTS

In total, 47 medical students filled in the questionnaire. This was 39.7% of all medical students attending the classes, considering that every discipline is offered to 40 students twice a year. Individual questions were not responded to by equal amounts of students and results are therefore presented with their individual response numbers, given as *N* and percentiles. During tabulation of the answers, groups A1 and A2 were combined as Group A. Tables 1-5 lists students answers to the questionnaire.

**Table 1 - Practice of acupuncture** - Student's answers across the two groups

#	Statements	Group A (n = 35)		Group B (n = 12)		% overall responses (n, %)	
		(+)	(-)	(+)	(-)	(+)	(-)
1	Only medical doctors should be allowed to practice acupuncture	0	31	0	12	0 0.0	43 91.5
2	Acupuncture can be practiced by non-doctors (physiotherapists, psychologists, nurses, therapists) qualified by their respective Councils.	25	6	6	9	31 66.0	15 31.9
4	Practitioners of Acupuncture are held in poor regard by most other doctors	8	14	3	7	11 23.4	21 44.7
9	Medical acupuncture practitioners are as emotionally stable as other orthodox doctors	6	8	6	2	12 25.5	10 21.9
10	Medical acupuncture practitioners are able to offer patients more time and are more prepared to listen than are other medical doctors.	13	12	6	5	19 40.4	17 36.2
12	Practitioners of orthodox medicine are more threatened by practitioners of acupuncture than the other way round	30	0	12	0	42 89.4	0 0.0
17	Women tend to enter Acupuncture practice more than men	3	18	1	9	4 8.5	27 57.4
23	Most practitioners of acupuncture in Brazil (medical and non-medical) receive a thorough training before going into practice	23	10	5	4	28 59.6	14 29.8
28	You need to be "gifted" to carry out acupuncture treatments	30	4	12	0	42 89.4	4 8.5

Group A = Group A1+Group A2 ; Group B = Control

(+) = Positive response (-) = Negative response

**Table 2 - The teaching of Acupuncture** - Student's answers across the two groups

#	Statements	Group A (n = 35)		Group B (n = 12)		% overall responses (n, %)	
		(+)	(-)	(+)	(-)	(+)	(-)
7	These days, Acupuncture is becoming a more important part of the curriculum in medical schools	13	4	6	6	19 40.4	10 21.3
15	Acupuncture should be taught in Brazilian medical schools	2	17	4	6	6 12.8	23 48.9
19	Acupuncture is less attractive as a discipline because it is less intellectually comprehensive than medical specialties	13	4	6	4	19 40.4	8 17.0
20	In the medical school syllabus, too little time is devoted to Acupuncture	2	16	5	6	7 14.9	22 46.8
26	Medical students in general know too little about Acupuncture effects	1	17	2	3	3 6.4	20 42.6
30	The training of practitioners of acupuncture is woefully inadequate	4	4	1	10	5 10.6	14 29.8

Group A = Group A1+Group A2 ; Group B = Control

(+) = Positive response (-) = Negative response

**Table 3 - The effectiveness of acupuncture** - Student's answers across the two groups

#	Statements	Group A (n = 35)	Group B (n = 12)	% overall responses (n, %)
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#	Statements	Group A (n = 35)		Group C (n = 12)		% overall responses (n, %)	
		(+)	(-)	(+)	(-)	(+)	(-)
5	Acupuncture is effective only in the treatment of simpler, less serious diseases	19	0	4	4	23 48.9	4 8.5
6	Acupuncture has no proven scientific basis	13	3	4	7	17 36.2	10 21.3
8	The knowledge of the mechanisms of action of acupuncture has advanced greatly in recent years	0	18	3	6	3 6.4	24 51.1
13	Patients on Acupuncture treatment hardly ever get better	19	0	10	0	29 61.7	0 0.0
14	Despite considerable research, there are few replicable results in Acupuncture practice	3	2	3	4	6 12.8	6 12.8
18	Acupuncture is just a placebo effect	16	1	8	1	6 12.8	6 12.8
21	Acupuncture is unrewarding because the treatment is so lengthy	15	2	3	9	18 38.3	11 23.4
22	Acupuncture has fewer side-effects than orthodox medical treatments	2	15	3	9	5 10.6	24 51.1
24	Although Acupuncture can be effective, it is limited to only specific problems	16	1	8	2	24 51.1	3 6.4
25	Acupuncture is more art than science.	10	7	10	2	17 36.2	9 19.1
27	Treating a condition using acupuncture is safer than using orthodox treatments	2	11	5	0	7 14.9	11 23.4
29	A surprising number of patients claim it is effective at curing their ills	0	16	3	7	3 6.4	23 48.9
38	Acupuncture works only on patients who believe in it.	12	5	9	1	21 44.7	6 12.8
40	There is no evidence that Acupuncture is effective	16	0	10	2	26 55.3	2 4.3

Group A = Group A1+Group A2 ; Group B = Control

(+) = Positive response (-) = Negative response

**Table 4** - Complications of Acupuncture - Student 's answers across the two groups

#	Statements	Group A (n = 35)		Group C (n = 12)		% overall responses (n, %)	
		(+)	(-)	(+)	(-)	(+)	(-)
31	Repeated treatment in CAM doesn't cause any harm, but with orthodox medicine it does	3	10	3	9	6 12.8	19 40.4
33	Bruises and small hematomas are frequent when using Acupuncture treatments	8	9	8	2	16 34.0	11 23.4
36	Acupuncture procedures are dangerous to health, mostly.	14	0	10	0	24 51.1	0 0.0

Group A = Group A1+Group A2 ; Group B = Control

A = Agree D = Disagree

**Table 5** - Advantages of Treatment by Acupuncture - Student's answers across the two groups

#	Statements	Group A (n = 35)		Group B (n = 12)		% overall responses (n, %)	
		A	D	A	D	A	D
3	The clinical problems presented by patients seeking treatment by acupuncture are interesting and challenging	0	16	0	11	0 0.0	27 57.4
11	Patients of Acupuncture tend to be better educated than patients of orthodox medicine	10	4	6	4	16 34.0	8 17.0
16	Acupuncture treatments by should be made available in the Public Service	0	19	5	7	5 10.6	26 55.3
32	The cost-benefit ratio is more satisfactory in the treatment by Acupuncture than in conventional treatments	6	10	3	8	9 19.1	18 38.3
34	Joint orthodox medicine/ Acupuncture therapy provides better therapeutic results Orthodox therapy alone.	0	19	5	0	5 10.6	19 40.0
35	Doctors should use Acupuncture to complement the effectiveness of conventional treatments	0	17	4	1	4 8.5	18 38.3
37	Acupuncture provides more cost-effective treatment than orthodox medicine	4	12	1	9	5 10.6	21 44.7
39	Successful treatment by Acupuncture is due to an emphasis on global treatment of the individual	0	19	1	11	1 2.1	30 63.8

Group A = Group A1+Group A2 ; Group B = Control  
(+) = Positive response (-) = Negative response

## DISCUSSION

A primary purpose of this survey was to assess changes in students' attitudes and beliefs before and after as they learned about Acupuncture. Although Chinese medicine includes many modalities of treatments, this is a specific study considering that the elective discipline offered to medical students in our institution (Faculty of Medicine - FAMED) included only topics related to the use of acupuncture in the treatment of different diseases that afflict the human being. Therefore our students were evaluated at the end of the discipline "Introduction to medical Acupuncture", offered twice a year to 3<sup>rd</sup> grade medical students. This discipline has been included in the medical curriculum as optional in 2006 and soon aroused the interest of students who filled the 40 vacancies offered twice a year. Topics covered in the study included "The effects of acupuncture", "Simplified Yin-Yang theory", "Complications related to Acupuncture treatments" and "Diagnosis based on Chinese medicine".

Students showed relatively homogenous responses to questions about their attitudes toward the role

of acupuncture in their medical school training and future patient care. In general, we did not perceive important differences in the responses of students, whether they attended or not the basic discipline of "Introduction to Acupuncture". Riccard and Skelton<sup>8</sup> (2008) compared the evolution of the opinions and attitudes of medical students of Florida (USA) throughout the course of medicine and concluded that these perceptions change as students are more exposed to allopathic techniques and procedures. On this occasion there is decline in the interest in CAM.

Concerning the topic "The practice of Acupuncture" (Table 1) both groups of students had similar opinions about the declaration "Only medical doctors should be allowed to practice acupuncture" as all students disagreed with this statement regardless of previous exposure to acupuncture classes (Group A). This behavior was repeated when analyzing the second statement "Acupuncture can be practiced by non-doctors (physiotherapists, psychologists, nurses, therapists) qualified by their respective Councils" as 71.4% of Group A and 50% of Group responses agreed with this statement. "You need



to be “gifted” to carry out acupuncture treatments” received positive responses from all control group students (100%) and 85,7% of Group A students suggesting that they believe you must have specific skills to learn and use acupuncture as a method of treatment. This is a fallacy, as we know that that any well trained medical professional can exercise with excellence this treatment modality.

Concerning the topic “The teaching of Acupuncture” (Table 2), Group A students considered that the inclusion of Acupuncture in the curriculum of medical schools is increasing (37,1%) but almost 50% of these students did not agree that Acupuncture should be included as a regular discipline in the medical curriculum. This results are opposite to Irish medical students’ perceptions of CAM. Loh et al.<sup>9</sup> (2013) surveyed Ireland medical students’ knowledge, perceptions, and Interest in CAM a verified that 50.2% of students believe CAM should be incorporated into the medical curriculum.

The responses to the topic “The effectiveness of acupuncture” (Table 3) showed that the students are not aware of the recent advances in the knowledge of the mechanisms of action of acupuncture as more than 50% of all students disagreed with the sentence stating that there has been progress in this area. On the other hand, the statement “There is no evidence that Acupuncture is effective” received positive response from most students (Group A: 45.7% and Group B : 83,3%), reinforcing our belief that our students ignore the latest scientific advances in the field of acupuncture. This result is opposite to Furnham et al. (2003) reports. Those researchers surveyed 311 medical students and found that 51.4% believe CAM

to be an effective means of therapy. One possible explanation for our negative results may be related to the fact the Acupuncture practice was not recognized as a medical specialty until recently in Brazil.<sup>1</sup>

Concerning the topic “Complications of Acupuncture” (Table 4) we verified that all respondent students believe than acupuncture procedures may represent a risk to the health of patients, denoting ignorance of safe needles insertion techniques.

Finally, most students have demonstrated ignorance of the advantages of therapeutic treatment of diseases using millenary techniques of Chinese medicine (Table 5). Most students have manifested against the deployment of complementary medicine (acupuncture) in the national health system.

## FINAL CONSIDERATIONS / LIMITATIONS

There are some limitations to this study. Our sample included only medical students at one institution, and thus the results may not be pertinent to other medical schools. Although the response rate was almost 40%, relatively good for a survey instrument, the number of students who fill in the questionnaire was small. We believe that there is undoubtedly a self-selection bias, which possibly skews the findings.

## CONCLUSIONS:

We concluded that despite the growing interest of our medical students in participating in the optional course “Introduction to Medical Acupuncture” there is some opposition to its inclusion in the regular medical curriculum. In addition, students are unaware of the benefits and effectiveness of acupuncture in the treatment of many diseases.

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## CONFLICT OF INTEREST

None

## AUTHOR PARTICIPATION

S.B.Guimarães; designed of the study and wrote the manuscript. A.H.Silva, P.A.Dias, I.B.A.Guimarães: participated equally on data organization and analysis.

## REFERENCES

- 1 – Conselho Federal de Medicina. Resolução 1455/1995. Available at: [http://www.portalmedico.org.br/resolucoes/CFM/1995/1455\\_1995.htm](http://www.portalmedico.org.br/resolucoes/CFM/1995/1455_1995.htm). Accessed on 11 May 2013.
- 2 – Baugniet J, Boon H, Østbye T. Complementary/alternative medicine: comparing the views of medical students with students in other health care professions. *Fam Med* 2000; 32(3): 178-84.
- 3 – Greiner KA, Murray JL, Kallail KJ. Medical student interest in alternative medicine. *J Altern Complement Med* 2000; 6(3): 231–4.
- 4 – Owen D, Lewith G. Complementary and alternative medicine (CAM) in the undergraduate curriculum: the Southampton experience. *Med Educ* 2001; 35: 73–7.
- 5 – What Is Complementary and Alternative Medicine?. U.S. Department of Health & Human Services. National Institutes of Health. National Center for Complementary and Alternative Medicine Available at: <http://nccam.nih.gov/health/whatiscam>. Accessed: 05 May 2013.
- 6 – What is Traditional Chinese Medicine? Available at: <http://www.umm.edu/altmed/articles/traditional-chinese-000363.htm>. Accessed: 11 May 2013.
- 7 – Furnham A, McGill C. Medical Students' Attitudes About Complementary and Alternative Medicine. *J Altern Complement Med* 2003;9(2):275-84.
- 8 – Riccard CP, Skelton M. Comparative analysis of 1st, 2nd, and 4th year MD students' attitudes toward Complementary Alternative Medicine (CAM). *BMC Research Notes* 2008; 1:84.
- 9 – Loh KP, Conroy R, Ghorab H, Clarke E, Barlow J. Medical Students' Knowledge, Perceptions, and Interest in Complementary and Alternative Medicine. *J Altern Complement Med*,2013; 19(4): 360-6.