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Knowledge and Attitude about Complementary and Alternative Medicine: Perceptions of Brazilian Health care Students

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Abstract*— *Objective: This study aimed to analyze the knowledge and attitude about Complementary and Integrative Health of Brazilian students of the health area. Methods: The cross-sectional study was conducted in the period from February to December 2012, with 163 students from two universities of different regions of Brazil. The Health Promotion in University Evaluation Instrument (IAPSU) was used to collect data about Complementary and Integrative Health. Results: With regard to the knowledge of the students about the concept of CIH, 47.2% of the students, being 52% of the northeast students and 43.3% of the southeast students, claimed to understand this concept, with no statistical significance when comparing the institutions (p>0.05). When asked if they knew the 20 different practices listed in the questionnaire, there was greater knowledge about acupuncture (87.1%), followed by medicinal herbs (82.8%), massage (80.9%), meditation (80.9%) and diets (80.3%). The practices most widely used by the students, however, were massage (38%), relaxation (36.8%), herbs (33.7%), diets (29.4%) and homeopathy (27.6%). Conclusion: It was concluded that the knowledge and use of CIH practices by students of different health courses in two Brazilian universities was limited and that the most known of these were acupuncture, herbal remedies, massage, meditation and diets, with, however, massage, relaxation, medicinal herbs, diets and homeopathy being more used.

Keywords*— *Health Education; Health Promotion; Integrative Medicine; University.

I. INTRODUCTION

In 2006, responding to the call of "World Health Organization Traditional Medicine strategy 2002-2005" [1,2], based on the progress of countries and current new challenges in the field of Complementary and Alternative Medicine (CAM), the Brazilian government created the National Policy on Integrative and Complementary Practices (NPICP) as part of the Brazilian National Health System (SUS) [3]. The main goal was to introduce CAM into all public healthcare services in Brazil, as well as into the undergraduate curricula of the health professions. However, CAM has been introduced very slowly into the care and even more slowly into the training of health professionals.

With the creation of the National Policy on Integrative and Complementary Practices, the Brazilian government extended the concept of CAM by placing emphasis on the perspective of the plurality of actors and actions in the health field with the adoption of the concept of integrality and practices, related to all health professionals, replacing medicine associated with a profession [3]. In 2014 similar expansion was carried out by the US government when changing the name of the National Center for Complementary and Alternative

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Medicine to the National Center for Complementary and Integrative Health (NCCIH). Due the similarity of the nomenclatures and perspectives adopted by the NPICP and the NCCIH throughout the article Complementary and Integrative Health (CIH) will be used [4].

Brazil is a country of continental dimensions marked by important socio-territorial inequalities, cultural diversity and very complex demographic dynamics, so that the local and regional contexts influence the development of public policies [5, 6]. Thus, although there are national standards for the health services, such as the NPICP in the SUS, and for undergraduate education of different professions in the health area, with National Curriculum Guidelines for undergraduate courses, it is clear that the concepts of CIH are not fully disseminated in the care and educational practices [7-9].

However, reduced academic teaching experiences of CIH has been registered, which results in resistance of health professionals to include these practices in the healthcare [10-16].

This study aimed to analyze the knowledge and attitude about Complementary and Integrative Health of Brazilian students of the health area. In the following sections the methodological procedures for collecting and analyzing the data are presented, the results of the knowledge and use of CIH in both institutions, as well as the implications of the study findings for the expansion of CIH in the care and education of the health field.

II. METHODS

The cross-sectional study was conducted in the period from February to December 2012. The study population was composed of students from two Brazilian universities, one (NU) in the northeast region, located in the state of Ceará, with this institution being private and having approximately 30,000 undergraduate and graduate students. The other university (SU) is located in the southeast region, in the state of São Paulo, this one being public, with approximately 35,000 undergraduate and graduate students.

The sample calculation was based on two analyzes. In the first, the total sample of students who were enrolled in the second year of undergraduate courses in medicine, nursing, pharmacy and speech therapy in 2012 was calculated. This universe of students enrolled in the two institutions was 637 students. The second analysis was based on an estimated age of 19 years at the time of data collection. Considering that the student finishes high school aged 17/18 years and that healthcare courses have the most competitive entrance examination, the likelihood of these students being in the age range of the survey would be around 50%, taking into account a β of 0.2. Therefore, the study population was estimated at 319 students and the sample was 163, corresponding to 51%.

Failure to provide any information for the instrument proposed in the study was used as an exclusion criterion. The Health Promotion in University Evaluation Instrument (IAPSU) was used for data collection, composed of identification items and 41 questions divided into five domains: physical activity (9 questions), diet (6 questions), environmental factors (5 questions), psychosocial factors/consumption of alcohol and drugs (18 questions) and CIH (3 questions). The present study only considered the questions related to CIH [17].

The data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 17.0. To analyze the homogeneity of the sample the Kolmogorov-Smirnov normality test was performed. In the descriptive analysis mean, standard deviation and percentage were used. The comparison of the results between the groups was performed using student's t-test for independent samples, with the chi-squared test used to assess the association of the categorical variables. P values <0.05 were considered statistically significant.

III. RESULTS

A total of 166 questionnaires were completed, with three excluded due to incomplete information, so that 163 students participated in the study, 73 (44.8%) of the NU and 90 (55.2%) of the SU. When comparing the sociodemographic variables: gender, age, marital status and family income, there were no significant differences, demonstrating the homogeneity of the sample (Table 1).

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Table 1: Sociodemographic aspects of the participants of a northeast and a southeast Brazilian university.

	Total (n=163)	**NU (n=73)**	**SU (n=90)**	***p-value***
Age (years)	18.2 ± 0.6	18.3 ± 0.6	18.2 ± 0.6	0.1
Gender (M/F)	32/131	11/62	21/69	0.1
Marital Status				
Single (n/%)	163 (100%)	73 (100%)	90 (100%)	1.0
Family Income (MW)	4.8 ± 2.1	4.2 ± 2	5.3 ± 2.2	0.08

NU= Northeast University; SU= Southeast University; n= number of subjects; ± = standard deviation; M = male; F = female; MW = minimum wage.

Regarding the knowledge of the students about the concept of CIH, 47.2% (n=77) of the students, being 52% (n=38) of the NU students and 43.3% (n=39) of the SU students, claimed to understand this concept, with no statistical significance in the comparison between institutions (p>0.05). However, when asked if they believed that CIH could promote health, 86.3% (n=63) of the NU students and 83.3% (n=75) of SU students said yes, which represents a higher percentage than those of both universities that claimed to know the concept.

When asked if they knew the 20 different CIH practices listed in the questionnaire, there was greater knowledge of acupuncture (87.1%), followed by medicinal herbs (82.8%), massage (80.9%), meditation (80.9 %), and diets (80.3%). The practices most widely used by the students, however, were massage (38%), relaxation (36.8%), herbs (33.7%), diet (29.4%), and homeopathy (27.6%) (Table 2).

Table 2: Knowledge and Use of CIH of 163 Brazilian students.

	Knowledge	**Attitudes**
Variables	**n (%)**	**n (%)**
Acupuncture	142 (87.1)	14(8.5)
Aromatherapy	92 (56.4)	5 (3.0)
Crystals	67 (41.1)	6 (3.6)
Chromotherapy	5 (3.0)	5 (3,0)
Diets	131 (80.3)	48 (29.4)
Medicinal herbs	135 (82.8)	55 (33.7)
Floral remedies	87 (53.3)	22 (13.4)
Hydrotherapy	96 (58.8)	5 (3.0)
Homeopathy	101 (61.9)	45 (27.6)
Iridology	13 (7.9)	2 (1.3)
Lian Gong	46 (28.2)	16 (9.8)
Massage	132 (80.9)	62 (38)
Meditation	132 (80.9)	33 (20.2)
Moxibustion	10 (6.1)	3 (1.8)
Music Therapy	101(61.9)	12(7.3)
Orthomolecular	48 (29.4)	5 (3.0)
Chiropractic	31 (19)	1 (0.6)
Reflexology	35 (21.4)	3 (1.8)

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Reiki	43 (26.3)	15 (9.2)
Relaxation	123 (75.4)	60 (36.8)

n = number of individuals; % = percent.

There was greater knowledge of 16 practices by the SU students ($p<0.05$) (Table 3), with the best-known practice in both institutions being acupuncture, with 75.3% (n=55) of the NU students and 96.6% (n = 87) of the SU students. Chromotherapy was the least known practice, with no NU student knowing about it and only 5.5% (n=5) of the SU knowing it.

Table 3: Comparison of knowledge of CIH among students of a northeast and a southeast Brazilian university.

	NU (n=73)	**SU (n=90)**	***p-value***
	n (%)	**n (%)**	
Acupuncture	55 (75.3)	87 (96.6)	<0.001*
Aromatherapy	23 (31.5)	69 (76.6)	<0.001*
Crystals	17 (23.3)	50 (55.5)	<0.001*
Chromotherapy	0 (0)	5 (5.5)	0.04*
Diets	54 (74.0)	77 (85.5)	0.01*
Medicinal herbs	54 (74.0)	81 (90.0)	0.003*
Floral remedies	25 (34.2)	62 (68.8)	<0.001*
Hydrotherapy	41 (56.1)	55 (61.1)	0.5
Homeopathy	25 (34.2)	76 (84.4)	<0.001*
Iridology	3 (4.1)	10 (11.1)	0.1
Lian Gong	3 (4.1)	43 (47.7)	<0.001*
Massage	54 (74)	78 (86.6)	0.03*
Meditation	52 (71.2)	80 (88.8)	0.001*
Moxibustion	4 (5.5)	6 (6.6)	0.8
Music Therapy	28 (38.3)	73 (81.1)	<0.001*
Orthomolecular	11 (15)	37 (41.1)	<0.001*
Chiropractic	9 (12.3)	22 (24.4)	0.059
Reflexology	13 (17.8)	22 (24.4)	0.3
Reiki	11 (5.5)	32 (35.5)	0.005*
Relaxation	48 (65.7)	75 (83.3)	0.005*

NU= Northeast University; SU= Southeast University; n= number of subjects; ± = standard deviation; *= $p<0.05$; %= Percent.

Regarding the use of CIH practices by students was no statistically significant difference in the variables: chromotherapy, herbal medicine, floral remedies, homeopathy and lian gong, with greater use reported by the SU students ($p<0.05$) (Table 4).

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Table 4: Comparison of use of CIH among students of a northeast and a southeast Brazilian university.

	NU (n=73) n (%)	SU (n=90) n (%)	*p-value*
Acupuncture	4 (5.5)	10 (11.1)	0.2
Aromatherapy	1 (1.3)	4 (4.4)	0.2
Crystals	3 (4.1)	3 (3.3)	0.7
Chromotherapy	0 (0)	5 (5.5)	0.04*
Diets	25 (34.2)	23 (25.5)	0.2
Medicinal herbs	17 (23.2)	38 (42.2)	0.01*
Floral remedies	2 (2.6)	20 (22.2)	0.001*
Hydrotherapy	2 (2.6)	3 (3.3)	0.8
Homeopathy	6 (8.2)	39 (43.3)	<0.001*
Iridology	0 (0)	2 (2.2)	0.2
Lian Gong	0 (0)	16 (17.7)	<0.001*
Massage	30 (41.0)	32 (35.5)	0.2
Meditation	12 (16.4)	21 (23.3)	0.3
Moxibustion	1 (1.3)	2 (2.2)	0.7
Music Therapy	6 (8.2)	6 (6.6)	0.5
Orthomolecular	2 (2.6)	3 (3.3)	0.8
Chiropractic	1 (1.3)	0 (0)	0.2
Reflexology	0 (0)	3 (3.3)	0.1
Reiki	3 (4.1)	12 (13.3)	0.053
Relaxation	24 (32.8)	36 (40)	0.3

NU= Northeast University; SU= Southeast University; n= number of subjects; ± = standard deviation; *= $p<0.05$; %= Percent.

IV. DISCUSSION

This study is relevant as it analyzed the university environment in Brazil in different local and regional contexts. Its limitations are focused on the fact that not all the undergraduate courses of the health area existing in the universities studied were included, as well as the lack of evaluation of the knowledge and attitudes of the students throughout the course and at the end of their education.

The comparison between the two regions is relevant considering the continental dimension of the country and the socio-economic and cultural differences. Some of the major urban and industrial centers, responsible for most of the national Gross Domestic Product, are found in southeast Brazil. The northeast of the country is characterized by greater vulnerability to climatic variations, lower levels of education, income and skills, with large areas poorly integrated into the national economy [18].

Regarding the CIH, many of the Northeast students said that they understood this concept, representing a greater percentage in relation to the southeast students, however, there was no statistical difference when comparing the results. When asked if they knew the 20 different practices listed in the questionnaire, there was greater knowledge of 16 of these by the SU students ($p<0.05$), contradicting the previous data and leading to a reflection regarding whether these students really understand the concept of CIH.

Over 80% of the students from the two universities considered CIH important to promote health, which represents more than those who claim to know them. This fact makes us believe that, despite not being able to describe each of the unconventional practices according to

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the scientific literature, the students perceived them as positive for the development of healthy individuals.

A study by Fontanella et al. [19] aimed to analyze the knowledge, access and acceptance related to CIH for female SUS users in southern Brazil and showed that the majority of the practices were not known by the community, although teas, spiritual healing and herbal medicine were therapies that the population knew and used. The article confirmed that the use of non-conventional therapies without the accompaniment of a health professional was common. Another study, with professionals of primary care teams of the SUS, showed incipient use of CIH by the professionals, while valorization of these practices by the population was perceived, especially those involving cultural tradition, such as the use of medicinal plants [20].

According to Azevedo and Pelicioni [21] and Barros et al. [11] the health area courses, in all of Brazil, have been unable to overcome the biomedical perspective and propose actions for teaching CIH. Also according to the authors, only some educational institutions offer disciplines in their curriculum that include the basic concepts of the various non-conventional health practices. Salles, Homo and Silva [22] analyzed the situation of the teaching of CIH in physical therapy, nursing and medical courses of Brazilian institutions, unlike those investigated through analysis of the curriculum, and showed that while the complementary and integrative practices are recognized by the federal councils of different professions, few institutions offer disciplines related to CIH and when offered they are in the form of non-compulsory subjects.

Local evidence produced by the present study and by other Brazilian researchers agrees with global records, such as that of the Institute of Medicine's Committee on the Use of Complementary and Alternative Medicine by the American Public [23-32].

A study performed with students of the first semester of a medical course in the United States found that 84% reported knowing what CIH is [33], similar to that observed in the present study. In Australia a similar study, with 800 medical students of the first, third and fifth year of the undergraduate course, highlighted low self-reported knowledge (56%) regarding CIH. In the same study the students reported that massage, meditation and acupuncture were the practices best known by them [34], also corroborating the results of this study in Brazil.

Otani and Barros [35] believe that the importance of vocational training for the spread of a new and comprehensive view of health, in the short term, may have higher costs due to changes in the organization of the health system and in the perceptions of professionals regarding the health-illness-care process. They also highlighted that in the medium and long term, the creation of integrated services will lead to reduced costs, disease prevention and health promotion. Complementary and Integrative Health practices can be useful resources in this process, especially as they establish the holistic perspective and individual empowerment, with impacts in the daily lives of individuals and communities [36].

Considering, however, the low level of use and knowledge of the practices associated with CIH by students and professionals of the health area courses, both in the different Brazilian regions and the different countries of the world, there is the need to construct specific plans directed toward its teaching [20, 23-32]. These plans can be critical to the health field for guiding the training of health professionals concerned with reducing the effects of medicalization [37,38] and pharmaceuticalization [39], with practices that seek to stimulate the natural mechanisms of care, with an emphasis on a welcoming and humanized listening, operated with an integrative view of the health-disease-care process.

V. CONCLUSION

It was concluded that the knowledge and use of CIH practices by students of different health courses in two Brazilian universities was limited. Furthermore, it was concluded that the complementary and integrative practices better known by the students were acupuncture, herbal remedies, massage, meditation and diet, with, however, massage, relaxation, medicinal herbs, diets and homeopathy being more used.

It was also evident that the SU students presented lower self-reported knowledge regarding the definition of CIH, although they knew more practices and made more use of these. The urgency is emphasized of the creation of a new view of the curriculum of undergraduate courses in the field of health and new studies with larger numbers of participants and more institutions, to increase local and global strategies to strengthen the implementation of CIH in the care and training in the health area.

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