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Use of medicinal plants by health professionals in Mexico

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ABSTRACT

Ethnopharmacological relevance: The use of medicinal plants in Mexico has been documented since pre-Hispanic times. Nevertheless, the level of use of medicinal plants by health professionals in Mexico remains to be explored.

Aim of the study: To evaluate the use, acceptance and prescription of medicinal plants by health professionals in 9 of the states of Mexico.

Materials and methods: Direct and indirect interviews, regarding the use and acceptance of medicinal plants, with health professionals (n=1614), including nurses, physicians, pharmacists, and odontologists from nine states in Mexico were performed from January 2015 to July 2016. The interviews were analyzed with the factor the informant consensus (FIC).

Results: The information obtained indicated that 46% of those interviewed feel patients should not use medicinal plants as an alternative therapy. Moreover, 54% of health professionals, and 49% of the physicians have used medicinal plants as an alternative therapy for several diseases. Twenty eight percent of health professionals, and 26% of the physicians, have recommended or prescribed medicinal plants to their patients, whereas 73% of health professionals were in agreement with receiving academic information regarding the use and prescription of medicinal plants. A total of 77 plant species used for medicinal purposes, belonging to 40 botanical families were reported by the interviewed. The results of the FIC showed that the categories of diseases of the digestive system (FIC=0.901) and diseases of the respiratory system (FIC=0.898) had the greatest agreement.

Conclusions: This study shows that medicinal plants are used for primary health care in Mexico by health professionals.

1. Introduction

Mexico is considered as one of the most biodiverse countries in the world. There are an estimated 23,400 vascular plants in Mexico, of which 3000 have medicinal effects (Bye, 1993; Argueta et al., 1994; CONABIO, 2006). The use of medicinal plants in Mexico has recorded since pre-Hispanic times (Viesca, 1992).

Abbreviations: IMSS, The Mexican Institute of Social Security; ISSSTE, The Institute for Security and Social Services for State Workers; SSA, The Ministry of Health; FIC, the factor of informant consensus

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Mexican health authorities have shown interest in the research of medicinal plants and the General Health Office published the Herbal Pharmacopeia in 2001 and 2013 (FHEUM, 2001, 2013). Nevertheless, only a small group of medicinal plants have been studied for their pharmacological, phytochemical, and toxicological effects, as well as for their pharmacokinetics. In 2012, 52.6% inhabitants were covered by public health insurance (INEGI, 2012). This means that almost a half of the population have no access to a public health institution. Therefore, this population needs to appeal to alternative medicine, including medicinal plants, which are prescribed by "yerberos" or traditional healers (Casas et al., 2001; Canales et al., 2006).

The use and acceptance of medicinal plants by the general population in Mexico has been documented (e.g. Frei et al., 1998; Canales et al., 2005; Estrada et al., 2007; Robles-Zepeda et al., 2011; Beltrán-Rodríguez et al., 2014). The acceptance and use of medicinal plants by health professionals in Mexico has not yet been reported. Taddei-Bringas et al. (1999) carried out a survey in the state of Sonora (Northern Mexico) about the use and acceptance of herbal medicine by physicians, whereas Romero-Cerecero et al. (2004) carried out a study regarding the use and acceptance of phytomedicines by physicians in the states of Morelos and Guerrero (Centre of Mexico). The aim of this study was to evaluate the use, acceptance and prescription of medicinal plants by health professionals in Mexico.

2. Methods

2.1. Data collection

Direct and indirect interviews with health professionals (nurses, physicians, pharmacists, and odontologists) from the Mexican states of Baja California, Mexico City, state of Mexico, Guanajuato, Jalisco, Nayarit, Puebla, San Luis Potosi, and Yucatan, were performed from January 2015 to July 2016. A total of 1614 health professionals were interviewed individually in private sectors and the three main public health institutions in Mexico: 1) the Mexican Institute of Social Security (IMSS), 2) the Institute for Security and Social Services for State Workers (ISSSTE), and 3) the Ministry of Health (SSA). Sociodemographic characteristics are given in Table 1. Interviews were conducted through a structured questionnaire. The inclusion criteria were health professionals: graduated with at least one year of work experience, currently working in a private or public health institution in Mexico. Health professional that were undertaking specialty training were also included in this survey. There was no age restriction. Before beginning the interviews, the consent of participation was obtained. The questions were regarding: the common and local name of the plant used, medicinal use of plant species, preparation, and the plant parts used. Questions regarding the acceptance of medicinal plants, recommendation in the use of medicinal plants, and the agreement to receive academic information about the use and prescription of medicinal plants were included in this survey. The validation of the survey was performed with 100 people in Guanajuato city. The informants were requested to provide a brief botanical description of the plant species that they mentioned. The specimens indicated by the respondents were collected in different areas from Mexico, identified and deposited at herbarium of Facultad de Estudios Superiores Zaragoza, Universidad Nacional Autonoma de México (FEZA), and the National Herbarium of Mexico (MEXU). The botanical names were corroborated at Missouri Botanical Garden-Tropicos (2010) and International Plant Names Index (2008).

2.2. Data analysis

The diseases treated with medicinal plants were grouped into 11 categories based on the classification used by the International Classification of Diseases used by the World Health Organization (ICD, 2007).

Table 1
Sociodemographic characteristics.

Characteristic	Value	Frequency [n (%)]
Age group (years)	19–29	560 (34.7)
	30–39	470 (29.1)
	40–49	303 (18.8)
	50–59	199 (12.3)
	60–69	70 (4.4)
	70–79	12 (0.7)
Gender	Men	828 (51.3)
	Women	786 (48.7)
Occupation	Physicians	810 (50.2)
	Nurses	520 (32.2)
	Pharmaceutists	159 (9.9)
	Odontologists	125 (7.7)
Work practice (years)	1–9	888 (55)
	10–19	394 (24.4)
	20–29	232 (14.4)
	30–39	88 (5.5)
	40–49	12 (0.7)
Workplace sector	Public	830 (51.4)
	Private	784 (48.6)
Specialist degree	Yes	250 (15.5)
	No	1364 (84.5)
State of residence	Baja California	44 (2.7)
	Guanajuato	241 (14.9)
	Jalisco	148 (9.2)
	Mexico city	294 (18.2)
	Nayarit	68 (4.2)
	Puebla	363 (22.5)
	San Luis Potosi	200 (12.4)
	State of Mexico	195 (12.1)
	Yucatan	61 (3.8)

The Factor of Informant Consensus (FIC), adapted by Heinrich et al. (1998), estimates the level of agreement between interviewees about which plants to use for each category, and was calculated as follows:

$$\mathrm{FIC} = \frac{n\mathrm{ur} - n\mathrm{t}}{n\mathrm{ur} - 1}$$

Where *n*ur is the number of citations of the medicinal plant in each category and *n*t is the number of taxa or plant species that are used in each category. The result of this factor ranges from 0 to 1, where a value close to 1 indicates a well-defined selection criterion in the community and/or if that information is exchanged between informants, whereas a low value indicates that plant species are chosen randomly, or that informants do not exchange information about their use.

3. Results and discussion

3.1. Use of medicinal plants

The information obtained indicated that 46% of the interviewed, and 51% of the physicians, feel patients should not use medicinal plants as an alternative therapy due to the following reasons: a) are inefficient in the treatment of diseases (n=286), b) medicinal plants lack scientific evidence (n=200), and c) are not safe (n=197), among others. These trends found in Mexico and other countries range from 44.6% to 83% (Taddei-Bringas et al., 1999; Romero-Cerecero et al., 2004; Fakeye and Onyemadu, 2008; Rodríguez-Torres et al., 2013).

The results showed that 54% of health professionals, and 49% of the physicians, have used medicinal plants as an alternative therapy for