



From Chamomile to Aspirin? Medicinal Plant use among clients at Laboratorios Beal in Trujillo, Peru

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Research

Abstract

Medicinal plant use in Peru can be tracked back for millennia, and although westernized medicine has become an important factor in the treatment of illnesses, many patients still frequent herbalist shops and retain some herbal knowledge of their own. The present study, undertaken at "Laboratorios Beal," a herbalist practice in Trujillo, Peru, was conducted as a comparison to previous research at Clinica Anticona, a Western style clinic in the same city, to evaluate if patients at a herbal clinic were more likely to use plants for treatment rather than pharmaceuticals, and if their own plant knowledge was more extensive than the knowledge of the patients interviewed at a Western clinic. The results demonstrate that, amongst the patients of the herbal clinic, plants do played only a slightly larger role when compared to the use of pharmaceuticals, indicating that patients at the herbal clinic were as likely to use Western pharmaceuticals as patients at a Western clinic were using herbs, and vice versa. Even at a herbalist shop many patients thought that pharmaceutical medicine to be faster and more effective than herbs, while plants were regarded as safer and free from side-effects. The plant knowledge of individual patients was comparable to the knowledge encountered at a western medicinal facility.

Resumen

El uso de plantas medicinales en el Perú puede ser trazado hacia milenio atrás, y aunque la medicina occidental ha llegado a ser un factor importante en el tratamiento de la enfermedad, todavía muchos pacientes visitan las tiendas de herbolarios y retienen conocimientos propios de las yerbas. El estudio presente, llevado a cabo en "Laboratorios Beal", un consultorio herborístico en Trujillo, Perú, trata de descubrir si las pacientes a tal facilidad usan de preferencia plantas medicinales sobre productos farmacéuticos, y si sus conocimientos de plantas medicinales son más extensivos que los de los clientes de una clínica

occidental. Los resultados de nuestro estudio demuestran que, entre los pacientes de la tienda de yerbas, las plantas juegan un papel un poco más grande en comparación con el uso de productos farmacéuticos. Sin embargo, la diferencia es marginal y las preferencias de uso son comparables a esos de una clínica occidental. Por eso aún en la tienda de yerbas muchos pacientes piensan que la medicina farmacéutica es más rápida y efectiva mientras que se consideran a las plantas como más seguras y libre de efectos secundarios. Los conocimientos herborísticos de pacientes individuales son comparable a esos encontrados en una clínica occidental.

Introduction

Traditional Medicine and Complementary Alternative Medicine is used globally and has a rapidly growing economic importance. In developing countries, Traditional Medicine and Complementary Alternative Medicine is often the only accessible and affordable treatment available. In Latin America the WHO Regional Office for the Americas (AMRO/PAHO) reports that 71% of the popula-

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tion in Chile and 40% of the population in Colombia have used Traditional Medicine and Complementary Alternative Medicine (World Health Organization 1999, 2002). In the USA, a national survey reported the use of at least one of 16 alternative therapies increased from 34% in 1990 to 42% in 1997 (Eisenberg *et al.* 1998, UNCTAD 2000).

Traditional and Complementary Alternative Medicine are gaining more and more respect by national governments and health providers (Alves *et al.* 2007). Peru's National Program in Complementary Medicine and the Pan American Health Organization recently compared Complementary Medicine to allopathic medicine in clinics and hospitals operating within the Peruvian Social Security System (EsSalud 2000). A total of 339 patients - 170 being treated with Complementary Alternative Medicine and 169 with allopathic medicine - were followed for one year. Treatments for osteoarthritis; back pain; neuroses; asthma; peptic acid disease; tension and migraine headache; and obesity were analyzed. The results, with 95% significance, showed that the cost of using Complementary Alternative Medicine was less than the cost of Western therapy. In addition, for each of the criteria evaluated - clinical efficacy, user satisfaction, and future risk reduction - Complementary Alternative Medicine's efficacy was higher than that of conventional treatments, including fewer side effects, higher perception of efficacy by both the patients and the clinics, and a 53-63% higher cost efficiency of Complementary Alternative Medicine over that of conventional treatments for the selected conditions.

According to WHO (2002), the most important challenges for Traditional Medicine/Complementary Alternative Medicine for the next years are:

- Research into safe and effective Traditional Medicine and Complementary Alternative Medicine treatments for diseases that represent the greatest burden, particularly among poorer populations.
- Recognition of the role of Traditional Medicine practitioners in providing health care in developing countries.
- Optimized and upgraded skills of Traditional Medicine practitioners in developing countries.
- Protection and preservation of the knowledge of Indigenous Traditional Medicine.
- Sustainable cultivation of medicinal plants.
- Reliable information for consumers on the proper use of Traditional Medicine and Complementary Alternative Medicine therapies and products.

Material and Methods

The primary focus of this project has been the ethnobotany of medicinal plants used on the north coast of Peru. Northern Peru represents the "health axis" of the ancient Central Andean cultural area stretching from Ecuador to

Bolivia. The traditional use of medicinal plants in this region, which encompasses in particular the Departments of Piura, Lambayeque, La Libertad, Cajamarca and San Martín possibly dates as far back as the first millennium B.C. (north coastal Cupisnique culture) or at least to the Moche period (A.D. 100-800), with healing scenes and healers frequently depicted in ceramics.

Precedents for this study have been established by the late 17th-century plant collections of Bishop Baltasar Jaime Martínez Compañón (Sharon & Bussmann 2005), ethnoarchaeological analysis of the psychedelic San Pedro cactus (Sharon 2000), **curandera** depictions in Moche ceramics (Glass-Coffin *et al.* 2004), research on the medicinal plants of Southern Ecuador and Northern Peru (Bussmann & Sharon 2006a,b, Sharon & Bussmann 2006), and use in field guides on the medicinal plants of the region (Bussmann & Sharon 2007a,b).

In 2006, the authors investigated whether or not the clients of Clínica Anticona in El Porvenir, Trujillo, used Western medicines more than medicinal plants (Bussmann *et al.* 2007). The results demonstrated that - despite parallel use of phytomedicine - pharmaceutical medicines play a slightly larger role in such a setting when compared to the use of medicinal plants. This documented incorporation of Traditional Medicine and Complementary Alternative Medicine into public health has become an important topic in scientific discussion (Mignone *et al.* 2007, Rômulo *et al.* 2007).

In order to investigate if such findings hold true with clients of an herbalist, a comparative study was conducted at an herbal medicine shop called Laboratorios Beal, where Manuel Bejarano Alvarado is a **médico naturista** or herbalist. The results of this study demonstrated that in this setting medicinal plants played a somewhat larger role than pharmaceutical medicines.

Interviews were conducted daily at Laboratorios Beal, a herbal consultation shop in Trujillo, Peru, while clients waited in line to be seen by herbalist Manuel Bejarano Alvarado. The herb store was visited every day for two weeks from 7:30AM to 11:00AM. It was during these hours that the herbalist had the most clients waiting in line. As a requirement of checking their pulses they had to come in with empty stomachs. Clients were approached and informed that the authors were conducting research to investigate whether the population of Trujillo preferred to use medicinal herbs or pharmaceutical medicines. The first step was to explain the purpose of the study and the prior informed consent form (see Bussmann *et al.* 2007), which was signed by those who agreed to participate. The interviews were conducted by using a questionnaire as a guide for conversation, making sure all of the questions were answered. Every day was different in terms of how many people were willing to respond to questionnaires. There were times when there were a lot of people waiting

in line but only a few of them would want to participate. Then there were times when there were very few waiting in line but most of them would want to participate. However, by the end of two weeks, 100 questionnaires had been completed.

In the first few days of the research project the participants were asked to write down the answers on the questionnaires themselves. However, it soon became apparent that the people would be more willing to participate if asked questions with the authors noting the answers. This methodology proved more successful since it was discovered that sometimes the respondents wouldn't answer all the questions in the self-response format or they were confused with regard to the meaning of some of the questions.

The questionnaires were identical to those that were conducted by Bussmann *et al.* (2007) but an additional question ("Do your parents know more, less, or the same as you regarding the use of herbal medicines?") was added in order to ascertain if the knowledge of herbal medicines is increasing, decreasing, or remaining constant amongst that portion of the population of Trujillo represented by the clients of Laboratorios Beal. The informants were also asked to explain the meaning of **susto** (fright), **chucaquei** (shame), and **mal daño** (sorcery) in order to investigate if there was consensus amongst the respondents regarding the meaning of these traditional ailments.

Results

Sixty-seven percent of the interviewees were females and 33% were males. More women are represented in this study because there were always more women in the shop than men. Twenty-seven percent were married, 41% were single, 30% were cohabitating with a partner, 1% were divorced, and 1% were widowed. The average age amongst the respondents was about 38 years, 20% were between the ages 12-25, 30% were between the ages of 26-35, 19% were between the ages 36 and 45, 14% were between the ages 46 and 55, 11% were between the ages 57 and 65, and 6% were between the ages 70 and 77. Of the 100 informants, 75% had children and 25% did not. Of those with children, the average number of children was two, but about 42% of the informants had between one and two children. Most single respondents only had one or two children.

In terms of the education level of the respondents, 3% of the informants had no education at any educational institute, 15% had finished elementary school, 15% went to elementary school but didn't finish, 32% finished junior high-school, 12% went to junior high-school but didn't finish, 3% finished high-school, and only one went to high-school but didn't finish. Six percent attended university and graduated, 5% went to a university but didn't graduate, 5%

went to a technical institute and graduated, 2% went to a technical institute but didn't graduate, and one person didn't answer the question. Most of the respondents had the education level of a junior high-school graduate.

An interview was also conducted with Manuel Bejarano in order to acquire more information about the nature of his clientele and what were the most common cases amongst those clients. According to Sr. Bejarano, his clients come for a wide range of reasons, but they largely complained of stress or they had problems with their nervous system, inflammation, kidneys and lungs. He also indicated that many of the patients were women and that the average age range was from the age of 30 to the age of 60. Very few of his patients were elderly (**ancianos**) and very few were youths. Sr. Bejarano also stated that most of his patients came from outside of Trujillo, for example, from Lima, Huaraz and central Peru. Many clients indicated that this was their first time at the shop. In fact, they used this reason as their excuse for not wanting to participate or hesitating to participate in the questionnaire. When asked, Sr. Bejarano pointed out that he was recommended to many of his clients by other clients, and that he always had many first-timers as clients.

When asked what **susto** (fright), **chucaque** (shame), and **mal daño** (sorcery) were, it was interesting to find that the results were similar to those that were found by Bussmann *et al.* (2007). In their study, 84% of the respondents knew what **susto** and **chucaque** were while 58% said they knew what **mal daño** was. In the present study 72% said they knew what **susto** was, 82% said they knew what **chucaque** was, and 56% said they knew what **mal daño** was. A second part of the question in the present study asked the participants to explain what each disease was and how it was cured in order to investigate if there was a consensus amongst the population as to the nature of each ailment. Almost every respondent had a basic understanding that **susto** was a sickness where the person has problems with his or her nervous system and therefore loses a lot of weight and, that the sickness was caused by a sudden fright or shock experienced by the person. For example, a dog might have barked at the person unexpectedly. About 16% of those who said they knew what **susto** was said that the sickness was mostly a child's ailment. Only about 2% said that it was simply a sickness, 7% said that it was specifically an effect of being scared by an animal. The part of the answer where the respondents explained how the **susto** was cured was one where the answers varied greatly amongst the participants. Most of the responses basically included that **susto** was cured with herbs, **baños** (baths) and massaging with herbs, beef, eggs or newspaper conducted by a **curandero** or herbalist. The concept of what **chucaque** was, and how the condition was to be treated, very vague with varied answers. This condition often implies that the patients were ashamed (**tiene verguenza**) and included headaches and stomach problems. In addition, a person

who looked at another person in a negative way that could cause the victim to become ill. In most cases **chucaque** was to be cured with lime and salt, by pulling the hairs on the head to remove it, or by using eggs and newspaper, with herbs, and by **reventándolo** (cracking it out by cracking one's back).

Interviewees' understanding of **mal daño** was very basic. It was understood as an ailment that was caused by a person who envied another and wanted to harm that person, as well as a disease caused by sorcery practiced by **brujos** (sorcerers), whether they were hired by others or on their own. It had to be cured by going to the **curandero** or herbalist, and patients did not know how it was cured, other than that it was cured with herbs, baths and massage with herbs.

Another question addressed with what frequency patients used medicinal herbs or pharmaceuticals. Seven percent said they never used herbal medicines. These respondents were often those who mentioned that they were first-timers to the shop. Twenty-three percent of the informants said they used herbal medicines very little. Fifty-four percent said they used them moderately. Sixteen percent said they used them frequently.

In terms of how often interviewees used pharmaceutical medicines, seven percent said they never used them, 48% said they used them very little, 41% said they used them moderately, and 4% said they used them frequently. This indicated that the use of medicinal plants was more prevalent than the use of pharmaceutical medicines.

The participants were also asked what they use more frequently, originally with two choices: herbal medicines or pharmaceutical medicines. In the course of the study two more options ("both equally" and "none") were added. The results show that 48% used herbal medicines more of-

ten, 22% used pharmaceutical medicines more frequently, 28% used both equally, and 2% used neither. This is interesting in comparison to Busmann *et al.* (2007) who found that over 50% of the respondents used pharmaceutical products more, 35% said they used medicinal plants more and 15% said they used both equally.

Patients who answered that they preferred medicinal plants indicated that they used them more because they were better and didn't have side effects. Interestingly, only five of the respondents said they used medicinal plants because they were less expensive. Pharmaceutical medicines were used because patients assumed they acted faster. Other reasons included that the informants had more faith in science and that they did not have enough knowledge about medicinal plants. For those patients using both equally, one of the most popular reasons was that, when medicinal plants did not work, pharmaceutical medicines were employed and *vice versa*. Herbs were used when patients said they only felt "sick" and pharmaceutical medicines when they felt "very sick."

Which medicinal plants were the most popular and how they were used was an important part of the study. Table 1 shows the 10 most commonly used medicinal plants mentioned.

It was obvious that each herb was used for many reasons. Table 2 gives an indication of each respondent's herb usage. Patients at Laboratorios Beal were also asked which pharmaceuticals they used for what reasons. Table 3 shows the ten most important pharmaceuticals used by the respondents. Interestingly pharmaceutical products were mostly used for pain relief and flu.

Another question asked if the respondent's parent knew more, less, or the same about the use of medicinal plants. Seventy-two percent said their parents knew more than

Table 1. Ten most frequently used medicinal plants based on number of respondents using plant in Trujillo, Peru.

Medicinal Plant (number of responses)	Uses
Manzanilla (35)	Stomach aches, tea, stomach problems, cold, asthma, clean eyes, fever, nervous system, pain relief
Cola de Caballo (22)	Inflammation, infection, kidneys, liver, stomach problems
Matico (22)	Flu, stomach aches, pain relief, cough, infection, cold, baths, stomach problems
Eucalipto (20)	Flu, bronchioles, cough, baths, cold, asthma, tea
Chanca Piedra (15)	Kidney, liver, renal problems, gastritis, tea, inflammation
Una de Gato (13)	Inflammation, injuries, kidneys, liver, tea, infection
Anis (12)	Stomachaches, gas, tea, pain relief, cold
Hierba Luisa (12)	Stomach problems, nervous system, tea, blood pressure, diarrhea (infants)
Sabila (11)	Inflammation, stomach problems, urinary tract, injuries, liver, bronchioles, cold, every ailment
Pie de Perro (11)	Inflammation, infection, kidney, ovaries

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Table 2. Medicinal plants, uses and indication of relative importance based on number of positive responses reported by people visiting Laboratorios Beal in Trujillo, Peru. Number of positive responses from Bussman *et al.* 2007 from Clinica Anticona in El Porvenir settlement on the outskirts of Trujillo, Peru is provided for comparison. (1. No voucher specimens of plants were collected based upon the interviews so scientific taxa are identified as probable rather than confirmed. 2. Recently introduced plants.)

Patients citing plant	Importance	Importance Bussmann <i>et al.</i> 2007	Vernacular plant name (probable scientific taxa) ¹	Use
35	1	1	Manzanilla (<i>Matricaria recutita</i> L., Asteraceae) ²	stomach problems, nervous system, pain relief, cold, tea, eye-wash, fever, asthma
22	2	3	Cola de Caballo (<i>Equisetum bogotense</i> Kunth, Equisetaceae)	infection, inflammation, kidneys, stomach problems
22	2	2	Matico (<i>Piper aduncum</i> L., Piperaceae)	infection, cough, cold, vaginal infections, stomach problems, flu, kidney infection
22	2	-	Sauco (<i>Sambucus peruviana</i> Kunth, Caprifoliaceae)	urinary tract problems
20	5	4	Eucalipto (<i>Eucalyptus globulus</i> Labill., Myrtaceae) ²	flu, cold, cough, bronchial system, baths, tea, asthma
16	6	18	Hierba Buena (<i>Mentha spicata</i> L., Lamiaceae) ²	stomach ache, diarrhea for babies, tea, parasites, allergies, respiratory problems, mucus
14	7	12	Chanca Piedra (<i>Phyllanthus niruri</i> L., <i>P. stipulatus</i> (Raf.) G.L. Webster, <i>P. urinaria</i> L., Euphorbiaceae)	kidneys, inflammation, liver
12	8	9	Anis (<i>Pimpinella anisum</i> L., Apiaceae) ²	stomach ache, pain relief, cold, nervous system, tea, gas, stomach problems
12	8	13	Uña de Gato (<i>Uncaria tomentosa</i> (Willd. ex Roem. & Schult.) DC., Rubiaceae)	inflammation, kidney, liver, infections,
11	10	6	Sabila (<i>Aloe vera</i> (L.) Burm f., Asphodelaceae)	bronchial system, bruises, pain relief, inflammation, liver, cold, urinary tract problems, stomach problems, nervous system, injuries, "everything"
11	10	8	Hierba Luisa (<i>Cymbopogon citratus</i> (DC.) Stapf., Poaceae) ²	nervous system, digestion, pain relief, cold, diarrhea of babies, tea, blood pressure, stomach problems
11	10	18	Pie de Perro (<i>Desmodium molliculum</i> (Kunth) DC., Fabaceae)	infection, inflammation, ovaries, kidneys
8	13	4	Llanten (<i>Plantago linearis</i> Kunth, Plantaginaceae)	infection, inflammation, pain relief, injuries, stomach ache
7	14	24	Ajenco (<i>Artemisia absinthium</i> L., Asteraceae) ²	liver, stomach aches, inflammation, aire, cough
6	15	37	Oregano (<i>Origanum vulgare</i> L., Lamiaceae) ²	stomach ache
6	15	37	Tilo (<i>Tilia platyphyllos</i> Scop., Tiliaceae) ²	cough, cold, vaginal baths, nervous system
5	17	16	Toronjil (<i>Melissa officinalis</i> L., Lamiaceae) ²	nervous system, heart problems, stomach problems, menstruation problems
5	17	9	Boldo (<i>Peumus boldus</i> Molina, Monimiaceae)	kidney, liver, infection, gastritis
5	17	24	Molle (<i>Schinus molle</i> L., Anacardiaceae)	Cold, pain relief, susto

Patients citing plant	Importance	Importance Bussmann et al. 2007	Vernacular plant name (probable scientific taxa) ¹	Use
4	21	-	Cedron (<i>Aloysia triphylla</i> Royle, Verbenaceae)	pain relief, cold, high blood pressure, nervous system, infection
4	21	24	Apio (<i>Apium graveolens</i> L., Apiaceae) ²	stomach ache, menstruation problems, gas, digestion
4	21	28	Coca (<i>Erythroxylon coca</i> Lam., Erythroxylaceae)	liver, kidney, inflammation, flu, tea
4	21	-	Trinidad (<i>Mauria heterophylla</i> Kunth, Anacardiaceae)	infection
3	25	6	Linaza (<i>Linum sativum</i> L., Linaceae) ²	stomach problems, fever, inflammation
3	25	-	Culen (<i>Otholobium glandulosum</i> (L.) J.W. Grimes, Fabaceae)	tea, cold, stomach problems
3	25	-	Cerraja (<i>Sonchus oleraceus</i> L., Asteraceae) ²	stomach aches, nausea, pain relief, nervous system
2	28	37	Talla, Tara (<i>Caesalpinia spinosa</i> (Molina) Kuntze, Fabaceae)	infection
2	28	-	Te de Indio (<i>Capraria peruviana</i> Benth., Scrophulariaceae)	stomach problems, gastritis
2	28	24	Hierba Santa (<i>Cestrum auriculatum</i> L'Hér., Solanaceae)	baths, recogido
2	28	22	Paico (<i>Chenopodium ambrosioides</i> L., Chenopodiaceae)	diarrhea for babies, stomach aches
2	28	37	Flor de Overo (<i>Cordia lutea</i> Lam., Boraginaceae)	liver, infection
2	28	-	Hierba de Toro (<i>Cuphea strigulosa</i> Kunth, Lythraceae)	infection
2	28	-	Gramma Dulce (<i>Cynodon dactylon</i> (L.) Pers., Poaceae) ²	urinary tract problems, infections
2	28	9	Cebada (<i>Hordeum vulgare</i> L., Poaceae) ²	Inflammation, stomach problems
2	28	-	Escorcionera (<i>Perezia multiflora</i> (Bonpl.) Less., Asteraceae)	cough, flu
2	28	-	Romero (<i>Rosmarinus officinalis</i> L., Lamiaceae) ²	stomach aches, infection
2	28	-	Pimpinela (<i>Sanguisorba minor</i> Scop., Rosaceae)	heart problems
2	28	22	Panisara (<i>Satureja pulchella</i> (Kunth) Briq., Lamiaceae)	tea
2	28	-	Sen (<i>Senna monilifera</i> H.S. Irwin & Barneby, Fabaceae)	stomach problems
2	28	24	Flor de Arena (<i>Tiquilia paronychioides</i> (Phil.) A.T. Richardson, Boraginaceae)	kidney, ovaries, gastritis, ulcers
1	42	37	Culantrillo (<i>Adiantum concinnum</i> Humb. & Bonpl. ex Willd., Adiantaceae)	stomach aches
1	42	37	Malva Blanca (<i>Alcea rosea</i> L., Malvaceae)	inflammation, baths
1	42	-	Lancetilla (<i>Alternanthera porrigens</i> (Jacq.) Kuntze, Amaranthaceae)	blood pressure
1	42	-	Altamisa (<i>Ambrosia peruviana</i> Willd., Asteraceae)	cold
1	42	37	Guanabana (<i>Annona muricata</i> L., Annonaceae)	inflammation
1	42	-	Purunrosa (<i>Bejaria aestuans</i> Mutis ex L., Ericaceae)	Infection
1	42	-	Achiote (<i>Bixa orellana</i> L., Bixaceae)	prostate

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Patients citing plant	Importance	Importance Bussmann et al. 2007	Vernacular plant name (probable scientific taxa) ¹	Use
1	42	-	Borraja (<i>Borago officinalis</i> L., Boraginaceae) ²	cold
1	42	13	Flor Blanca (<i>Buddleja utilis</i> Kraenzl., Loganiaceae)	inflammation
1	42	-	Manayupa (<i>Desmodium molliculum</i> (Kunth) DC., Fabaceae)	cholesterol
1	42	37	Papa Semitona (<i>Dioscorea tambillensis</i> R. Knuth, Dioscoreaceae)	infection
1	42	-	Hinojo (<i>Foeniculum vulgare</i> Mill., Apiaceae) ²	stomach problems
1	42	-	Macacha (<i>Galvesia fruticosa</i> Gmel., Scrophulariaceae)	susto
1	42	-	Hercampuri (<i>Gentianella alborosea</i> (Gilg) Fabris, Gentianaceae)	blood pressure
1	42	-	Polen (Insect feces)	stomach aches
1	42	-	Nogal (<i>Juglans neotropica</i> Diels, Juglandaceae)	cough
1	42	-	Maca (<i>Lepidium meyenii</i> Walp., Apiaceae)	calcium, strength
1	42	-	Alfalfa (<i>Medicago sativa</i> L., Lamiaceae) ²	head aches
1	42	18	Poleo (<i>Mentha x piperita</i> L., Lamiaceae) ²	for eyes
1	42	37	Muña (<i>Minthostachys mollis</i> (Kunth) Griseb., Lamiaceae)	digestion
1	42	-	Albaca (<i>Ocimum basilicum</i> L., Lamiaceae) ²	stomach aches, cough, diarrhea of babies
1	42	37	Congona (<i>Peperomia inaequalifolia</i> Ruiz & Pav., Piperaceae)	nervous system
1	42	37	Pepa Palta (<i>Persea americana</i> Mill., Lauraceae)	diarrhea for babies
1	42	16	Valeriana (<i>Phyllactis rigida</i> (Ruiz & Pav.) Pers., Valerianaceae)	nervous system
1	42	18	Chicoria (<i>Picrosia longifolia</i> D. Don, Asteraceae)	dengue fever
1	42	-	Calahuala (<i>Polypodium crassifolium</i> L., Polypodiaceae)	infection
1	42	-	Ruda (<i>Ruta graveolens</i> L., Rutaceae) ²	susto
1	42	37	Agua de Papa (<i>Solanum tuberosum</i> L., Solanaceae)	kidney
1	42	-	Flor de Trebol (<i>Trifolium repens</i> L., Fabaceae) ²	kidney
1	42	15	Ortiga Negra (<i>Urtica magellanica</i> Juss. ex Poir., Urticaceae)	blood circulation
1	42	-	Agua de Choclo (<i>Zea mays</i> L., Poaceae)	kidney

Table 3. The ten pharmaceutical medicines used most frequently in Trujillo, Peru.

Acetaminophen (Panadol ®)(23)	Flu, headache, fever, pain relief, menstruation
Acetaminophen (Paracetamol ®)(23)	Headache, fever, pain relief
Amoxicillin (Amoxicilina)(15)	Infection, pain relief, inflammation, respiratory problems, cough
Altanjina (13)	Headache, fever, blood pressure
Naproxen (Apronax ®)(11)	Headache, inflammation, pain relief,
Ibuprofen (Ibuprofeno)(11)	Pain relief, headache, inflammation
Aspirin (Aspirina) (8)	Heart problems, headache, pain relief, flu, fever
Dolocontrolan ® (6)	Pain relief, infection, gastritis
Aspirin/Acetaminophen (Mejoral ®)(6)	Fever, flu, headache, pain relief
Doloflan ® (6)	Pain relief, inflammation, infection, headache

they did, 7% said they knew less, 11% said they shared the same amount of knowledge, and 10% could not answer the question because they either didn't know their parents, or their parents were dead and they did not remember. Fifty-one percent of the respondents with children said they did teach them about medicinal plants, and 12% said they did not. The question couldn't be applied to 12% of those informants with children because 9% had children that were too young and 3% did not see their children. Of the 12% who answered that they did not teach their children, the reasons given were very diverse. Some stated that they did not have enough knowledge about herbs themselves to teach their children, that the children were not interested in knowing, or that there was no time to teach them. Those who did teach their children about the use of medicinal plants had many reasons as to why they did so. One of the most popular reasons to teach the children was that the respondents wanted their children to have knowledge of how to cure themselves when they were ill. Another popular reason was that they thought herbs were better and healthier.

Discussion and Conclusion

It was no surprise to find that patients at an herbalist's shop used medicinal herbs more frequently than pharmaceutical medicines. People generally assumed that plants are healthier and better to use because they are natural and are thought to not have any side-effects. It is difficult to determine if the knowledge of the use of medicinal plants is growing or decreasing, but the indications are that the last generation knows more than the present. However, most of the present generation does teach their children about the use of medicinal plants. The present study also showed what medicinal plants the respondents used for specific purposes. It would be interesting to evaluate with bioassays the properties of the species used.

It is apparent that the respondents used medicinal herbs more often than pharmaceutical medicines, but only to a small degree. Bussmann *et al.* (2007) showed in their study at a private Western clinic that patients had a preference for pharmaceutical medicines, but also only to a

small degree. Similarly, the plant knowledge of patients at both facilities was largely identical, with an essentially overlapping selection of common, mostly introduced, species, and basically the same number of medicinal plants mentioned overall. This indicates that traditional medicinal knowledge is a major part of a people's culture that is being maintained while patients are also embracing the benefits of western medicine.

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