

PERCEPTION AND KNOWLEDGE OF BEE VENOM THERAPY AS AN ALTERNATIVE TREATMENT FOR COMMON AILMENTS IN SOUTHWESTERN NIGERIA

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ABSTRACT

The common honey bee is an insect that is beneficial to all especially the farmers. Its products include honey, propolis and bee venom amongst others. Several ailments of humans which cause high morbidity and mortality are more or less not responding to treatment with conventional remedies and hence, a need for alternative remedies in which bee venom therapy (BVT) is one. A total of 1500 well structured questionnaires were distributed across the three states of Ondo, Lagos and Ekiti, Southwest, Nigeria to assess the opinions and perception of the people on the use of BVT as alternative remedy for the treatment of various ailments. Significant differences ($p < 0.05$) in the rate of perception between the states were observed. BVT was found to be used more in treating various ailments in Ondo and Ekiti states than Lagos state. The common ailments treated with BVT in these states included rheumatism, relief of hypertension (RoH) and malaria. Since traditional medicine plays a crucial role in health care for a large part of the population living in developing countries, this study was to promote quality of life and the adoption of bee venom therapy among rural-urban dwellers in Nigeria and believers in traditional medicine globally.

Key words: Bee venom, ailments, Ondo, Ekiti, Lagos, Nigeria, alternative medicine.

INTRODUCTION

Apitherapy is the medical use of honey bee products as alternative remedies (Lee *et al.*, 2005). These include the use of honey, pollen, bee bread, propolis, royal jelly and bee venom (Cassileth, 1998). A wide variety of conditions and diseases such as autoimmune diseases and multiple sclerosis have been treated using bee venom (Broadman, 1997). The exact origin of apitherapy is difficult to pinpoint and can be traced back, in a general sense, to ancient Egypt, Greece and China (Lawrence, 2009). Use of honey and other bee products can be traced back thousands of years and healing properties are included in many religious texts including the Veda, Bible and Quran. These are mostly attributed to nutritional benefits of consumption of bee-products and not use of bee venom. While apitherapy encompasses use or consumption of bee products, in the Anglosphere,

the term is most commonly associated with bee venom therapy and not the consumption of honey or other bee products (Lee *et al.*, 2005). Bee venom therapy is claimed to be of use in the treatment of arthritis, bursitis, tendinitis and dissolving scar tissue (e.g. keloids), and herpes, among other illnesses (Lee *et al.*, 2005). The most abundant active component of the venom is melittin, which has many useful properties, including powerful anti-inflammatory, anti-bacterial and anti-viral actions (Wesselius *et al.*, 2005). However, bee venom is a complex mix of a variety of peptides and proteins, some of which have strong neurotoxic and immunogenic effects (Simics, 1994a, b; Wesselius *et al.*, 2005). There is no standardized practice for the administration of bee venom. Some purported that the location of the sting is important, with the sting acting as a sort of acupuncture in combination with the effects of the venom while others reported

that the location is not important. The number of stings also varies widely from a few to hundreds and they may be administered either by live bees or by injection. This treatment can cause pain, and even result in death, if the subject has an allergy to bee venom, which can produce anaphylactic shock (Broadman, 1962). This study therefore assessed the perception and knowledge of the healing power of the bee venom produced by bees as an alternative remedy for the treatment of common ailments among the people of South Western (Ekiti, Ondo and Lagos State), Nigeria.

MATERIALS AND METHODS

A total of 1500 well structured questionnaires were distributed across the three states of Ondo, Lagos and Ekiti, Southwestern Nigeria to assess the opinions and perception of the people on the use of BVT as alternative remedy for the treatment of various ailments. Five hundred questionnaires each were administered to people who were randomly chosen in each state capital city. The questions on the questionnaires were read and explained to them to obtain their opinions and perceptions on the alternative uses of BVT to treat various ailments.

Data Analysis

Total estimation was made by counting the number of questionnaires administered and compared to those that were not. Relationships between the various variables were determined to draw a conclusion using percentage and frequencies as reported by Ajibade *et al.* (2009).

RESULTS

Tables 1 and 2 show the results of demography and characteristics of the respondents in Ondo, Lagos and Ekiti States. There were significant differences ($P < 0.05$) in the rate of perceptions among the states according to the respondents from each state.

The regional distribution of the respondents covered largely the rain and swamp forests of the country where the common honey bees are found. The surveyed area ranged from less populated area of Lagos state (rural/peri-urban) to more populated

areas of Ondo and Ekiti states. The gender distribution showed higher number of females than males in Ekiti state and more males than females in other states. Bee venom therapy was found to be used more in treating various ailments in Ondo and Ekiti states than Lagos state. The common ailments treated with BVT in these states included rheumatism, relief of hypertension (R.H) and malaria (Figure 1).

The highest percentage of the respondents is within the age bracket of 21 – 40 years with 90.9 to 57.9% from Ondo and Ekiti States, respectively. Also, those within the age bracket of 51years+ above ranged from 9.1 to 21.1 % thus showing that the acknowledgement of BVT cut across the older age bracket. Furthermore, marital status of the BVT respondents showed that married ranged from 33.3 to 63.6% across all the States, while single ranged from 36.4 to 66.7%. The Christian faithful ranged from 42.42 to 88.9%, while Muslim ranged from 27.6 to 66.7%. The cost of treatment showed that majority of the respondents, as high as 89.6% believed the access to or utilization of BVT is cheap while about 10.4% believed it is expensive.

DISCUSSION

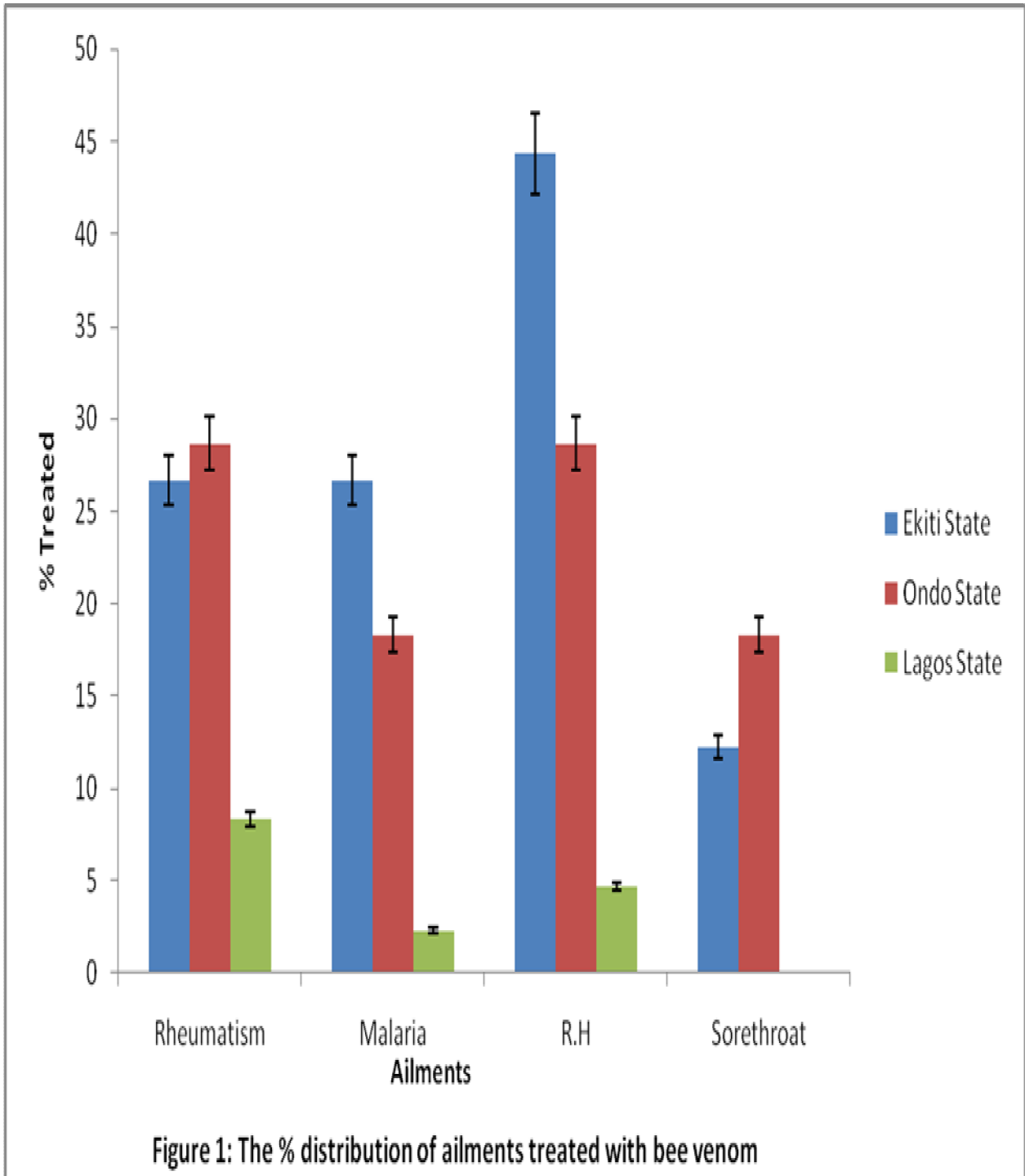
The use of animals and plants in traditional and modern medicine is becoming significant throughout the world. Plants and their chemicals constitute one of the world's largest sources of medicinal materials (Balick and Cox, 1997). The use of bee venom either through a live bee or through injection, according to the respondents, is of greater acceptance in Ondo and Ekiti States. This may be due to the availability of apiculturists, traditional bee keepers and traditional medicine men who have taken, as a matter of priority, the keeping of bee for production of various products including honey, bee wax, pollen and most especially the production of venom which has proved to help individuals in treating and suppressing the symptoms of various ailments.

Table 1: Bio-data of respondents in the three States

		EKITI STATE		ONDO STATE		LAGOS STATE	
		Freq 450	%	Freq 330	%	Freq 270	%
SEX	Male	90	36.8	180	54.5	180	66.7
	Female	360	63.2	150	45.5	90	33.3
AGE (yr)	0-20	120	26.67	-	-	30	11.1
	21-40	220	48.89	300	90.9	240	88.9
	41-50	-	0	-	-	-	-
	51 and above	110	24.44	30	9.1	-	-
MARITAL STATUS	Married	240	53.33	210	63.6	90	33.3
	Single	210	46.67	120	36.4	180	66.7
RELIGION	Christian	300	66.67	190	57.58	240	88.9
	Muslim	150	33.33	140	42.42	30	66.7
TRIBE	Yoruba	390	86.67	330	100	210	77.8
	Igbo	35	7.77	-	-	60	22.2
	Hausa	25	5.56	-	-	-	-

Table 2: Awareness among the respondents from the three States

		EKITI STATE	%	ONDO STATE	%	LAGOS STATE	%
		(Freq) 450		(Freq) 330		(Freq) 270	
Awareness	Yes	450	100	270	81.8	120	44.4
	No	-	-	60	18.2	150	55.6
Exposure	Yes	330	73.3	240	72.7	-	-
	No	110	24.4	90	27.3	270	100
Frequency of exposure	Yearly	210	53.3	-	-	-	-
	Monthly	240	42.1	30	9.1	-	-
	Weekly	-	-	150	45.5	-	-
	Daily	-	-	-	-	-	-
	None	100	22.2	150	45.5	-	-
Condition	Accident	80	17.8	30	9.1	60	22.2
	Treatment	330	73.3	210	63.6	210	77.8
	None	40	8.9	90	27.3	-	-
Cost of treatment	Expensive	47	10.44	92	27.9	54	20
	Cheap	403	89.6	238	72.1	216	80
Education	Literate	423	94	305	92.4	262	97.0
	Non-literate	27	6.0	25	7.6	8	3.0



It is apparent from this study that, religion/taboo is not a barrier to the acceptance of BVT in the study area. The results revealed that all ethnic groups embraced the adoption of BVT as alternative treatment. The higher percentage for the Yoruba

tribe is not surprising as the study was carried out in Yoruba speaking part of the country. Vast majority of the peoples interviewed were educated. This may be due to the fact that the Southwestern region of the country embraced education through the exploit

of foreign missionaries' right from the colonial and pre-independence era.

Bee products such as bee glue has been used for medicine which helps in treating, most importantly, hearing problems, cough that results in loss of voice, pharyngitis, tetanus, eye diseases, rashes and measles, while honey helps in treating weakness, abdominal pain, dry cough, rebellious chi(qi), constipation amongst others (Pemberton, 1999). The above-named ailments are similar to that treated with honey bee venom, according to the respondents in this study which include RoH, malaria, rheumatism, and sore throat amongst others.

While arthropod medicines are similar in most countries, the medical uses are frequently different (Read, 1935; Namba *et al.*, 1983). Since plants or their chemicals constitute one of our largest sources of drug materials (Balick and Cox, 1997), it is reasonable to expect pharmacological activity from arthropods, which feed on the drug-producing plants and incorporate phytochemicals or make similar chemicals. The biological and behavioural characteristics of honey bee suggest the presence of biological active chemicals that may be pharmacologically active, such as mellitin which is the major active component and of pharmacological importance in the bee venom (Zimian *et al.*, 1997; Wesselius *et al.*, 2005).

Drugs from arthropods continue to be important in South Korea and China, but are arbitrarily absent in modern Western medicine. The types of arthropods used for medicine in Korea and China also occur in Europe, North America, Africa and elsewhere, even though the species are different, but the families and many genera are the same (Brues *et al.*, 1954). Arthropod chemicals such as venom (bee venom), defensive secretions and antimicrobials, that appear to be the basis of pharmacological activity, are also widespread (Eisner, 1970; Hölldobler and Wilson, 1990). The enormous richness and diversity of arthropods and the use of many species as drugs against common and important ailments is worldwide. This suggests that arthropods are a large, unexplored and unexploited source of potentially useful compound for modern medicine (Pemberton, 1999).

Furthermore, the findings in this study are similar to the reported medicinal value of centipedes, *Cicada nympha* skins and larvae infected with silk moth fungus (Pemberton, 1999). There has been working

attention paid to animals, both invertebrates and vertebrates, as sources for new medicines (Chivian, 2000). Animals have been methodologically tested by the pharmaceutical companies as sources of drugs to the modern medical sciences (Kunin and Lawton, 1996) and the current percentage of animal sources for producing essential medicine is quite significant in bioprospecting.

Ingredients sourced from wild plants and animals are not only widely used in traditional medicines, but are also increasingly valued as raw materials in the preparation of modern medicines and herbal preparations (Zimian *et al.*, 1997; Kang and Phipps, 2003; Banjo *et al.*, 2004, Orilogbon and Adewole, 2011). This is not however, surprising as it has been stated that about 80% of the population in developing countries use non-wood forest products (NWFPs) to meet nutritional and health need (FAO, 1999). Therefore, from these findings, Nigeria should join the league of countries trying to explore the abundant bio-resources in animal and plant kingdoms in improving her health care facilities, by paying more attention to the use of non-conventional resources, such as bee venom therapy in her primary health care delivery system (WHO, 1978). Also, the interdependence between sustainability of both the environment and human species need full recognition in the development of new health practices (Brown *et al.*, 2005). Since traditional medicine plays a crucial role in health care for a large part of the population living in developing countries, this study was to promote quality life and the adoption of bee venom therapy among rural-urban dwellers in Nigeria and believers in traditional medicine globally.

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