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Research Article

Zootheraputic practices in Swabi district of Khyber Pakhtunkhawa Pakistan

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Abstract

The use of animals for therapeutic purpose is an important filed from ancient time. They utilize animals for different purposes like art, religion, music, and literature. In Zoo therapy different parts of the animal body, their products, or non-animal materials such as nests and cocoon are used. It has an important contribution to understanding traditional subsistence and medical knowledge and practices. The present study is intended to look into different zoo therapeutic medicinal uses in the traditional health care system among the native inhabitants of district Swabi, Khyber PakhtunKhawa Pakistan. It is of immense importance that 47 different types of animals species use for different type of diseases like cancer, diabetes, snake bite, fever etc. The part used, how they used and what is the Fidelity level (FL) and Relative frequency of citation (RFC) is the key points. This study highlights traditional zoo therapeutic remedial measures and verify it so that it used for the welfare of human on a commercial level.

Keywords: Ethno zoology; Fidelity level; Relative frequency of citation

Introduction

From the very beginning the peoples of different areas using plants and animals as Bio resources [1, 2]. In the modern health care system traditional medicinal knowledge is an important alternative in society i.e. about 70–80% of the world rural population depends on it [3]. The percentage of the population using traditional medicines for primary health care is more (60–90%) in developing countries than that in developed countries (23–80%) [4]. around 60% of commercially available drugs are based on bioactive compounds extracted from natural resources traditionally used by various indigenous cultures around the globe [5]. Although plants and plant derivatives have been used as a major constituent of traditional medicine, the identification of animal resources for a medicinal cure is also important in human health care [1, 6]. The healing of human ailments by using animals or products of animals is called Zootherapy. The use of animals for the therapeutic purpose is an important filed from ancient time. In Zoo therapy different parts of the

animal body, their products, or non-animal materials such as nests and cocoon are used. It has an important contribution to understanding traditional subsistence and medical knowledge and practices [7,8].

The zootherapeutic practices ratio are different in different parts of the world e.g. In Latin America, 584 animals distributed are used for traditional therapeutic medicinal value [9], 283 animal species are used in Brazil [10, 11], 180 animal species were recorded in the semi-arid region of Northeastern Brazil, Toba (Qom) communities of Argentine Gran Chaco region use 72 animal [12, 13]. In the whole world, China is on top in use of the animals for the traditional purpose. They use more than 1500 animal species for medicinal importance [14]. In Israel, the use was limited to 20 animal species as traditional drugs [Lev and Amar (2000). Our neighbor country India has a great faunal diversity accounting for about 10% of the reported biological species. 15–20 percent of Ayurvedic medicine is based on animal-derived substances [15]. It is hoped that by additional research the zoo therapeutic will be increased.

In Zoo therapy Mostly vertebrates were used. It does not mean that invertebrates are of no significance. A number of invertebrates are of main importance like the honey bee, silkworm etc. In vertebrates mammals, birds, fishes, and reptiles are of main importance. Amphibians are less commonly used among medicinal vertebrates. Ulysses et al reported that at least 165 species of reptiles, 101 species of primates. 55 species of Bovidae and 46 carnivorous mammals used in zoo therapy [16].

Many studies have been undertaken on Zoo therapy. However, there is no report available about its ethnozoology of district Swabi, Khyber Pakhtun Khawa Pakistan. Present study highlights and verify for the welfare of human on the commercial level.

Materials and methods

Study area

This paper explains the zootherapeutic in Swabi district of Khyber Paktun Khwa, Pakistan is given. This information was collected during the field survey on ethno zoology uses for the Ph.D. thesis. A brief summary of a district is given. The information was collected from 210 interviewers most of them know about plant uses but some of them (10%) given information about zoo therapy.

Methodology

Before starting the survey a Questionnaire was formed. In Questionnaire different question was included like a local name of the animal, part used, for which disease it is used, how it prepared, route of administration, the dose used, time of treatment etc. The age of respondents varied from 30 to 62 years. 210 interviewers were included in this study. The interviewers were selected on the basis of their experience, recognition as an expert knowledgeable persons, traditional healers concerning traditional medicine. All the ingredients were noted thoroughly, using standard literature, scientific name and species name of animals was identified [17, 18].

Data analysis

The method used by Manash and Surya 2017 were used with little modification [19]. Relative frequency of citation shows the native reliance on each species. The following formula use for their calculation.

RFC = FC/N

FC denotes the number of interviewer mentioning the use of the species and N is total number of interviewer [20]. This RFC index is in between 0 to 1. When RFC is 0, it means no interviewer given information about the animal usefulness and when RFC is 1, it shows that all given information about the animal usefulness [21].

Fidelity level

Fidelity level is used for the determination of animals used for the treatment of specific disease. It shows that most of the inhabitant of this area use specie for treating certain diseases. Fidelity level is calculated by Mootsamy and Mahomoodly 2014 formula as given below:

FL (%) = Np x 100/N

Where Np is denotes the number of interviewer mentioning the use of the species to treat a specific disease and N total number of interviewer who used the animals as a medicine to treat any given disease.

Results and discussion

Demographic details of interviewer

The inhabitants of Swabi district have great knowledge of animals and plants used for different diseases. They use it in their own ways and beliefs. Most of the interviewer were local practitioners known as Hakeem. Demographic information of the respondents was collected through face to face interaction. During the survey, respondents comprised an uneven distribution of the male-female ratio, 99.80 % were male interviewers. The same trend was also reported in other studies [22, 23]. The respondents or local practitioners were selected and interviewed in different the Tehsils of Swabi district. The age of respondents varied from 30 to 62 years. The percentage of a local medicinal practitioner with age lower than fifty was found to be very less with only 21% as compared to 79% of the age group of society above 50 years . The demographic details in the table show that the old local practitioners are more knowledgeable than younger ones [24]. Most of these local practitioners have knowledge of Zootherapy from their elder's one. The reason for less traditional medicinal knowledge among the younger generation could be due to urbanization and the assimilation of alien culture. Most of the secondary level education while some of them were up to graduation level (Table 1). Only 12 respondents (19.4%) were formally employed in government sector mainly as school teachers while others were mostly farmers, workers and local traditional healers. Most of the informants practiced this traditional therapy as a part-time job to serve the society. However, some are renowned well-known herbalist/healers who practice this traditional medicinal knowledge in large scale as their profession.

Table 1. Demographic profile of the informants included in survey (N = 51)

Demographic features Percentage	Number of people	Percentage
Gender		
Male	49	98.80
Female	2	1.20
Education		
Primary Education	7	13.72
Secondary Education	19	37.25
Graduate	21	41.17
Extra Qualification	4	7.83
Age Of Traditional Healer		
31-40	7	13.72
41-50	21	41.17
51-62	25	49.01
62 >	2	3.92

Ethnozoological analysis

About 46 animal's recorded in this study. They used to treat 47 diseases as summarizes in (Table 2). They are given under name of phylum, English name, scientific name, local name, the parts or byproduct of the species used to treat the disease. These belongs to both vertebrates (37 species) and invertebrates (15 species).the study reveals that mostly the peoples and healers of this district use insect .The second highest zoo therapeutic animals to be used are mammals as some of them are domesticated animals (Figure 1).

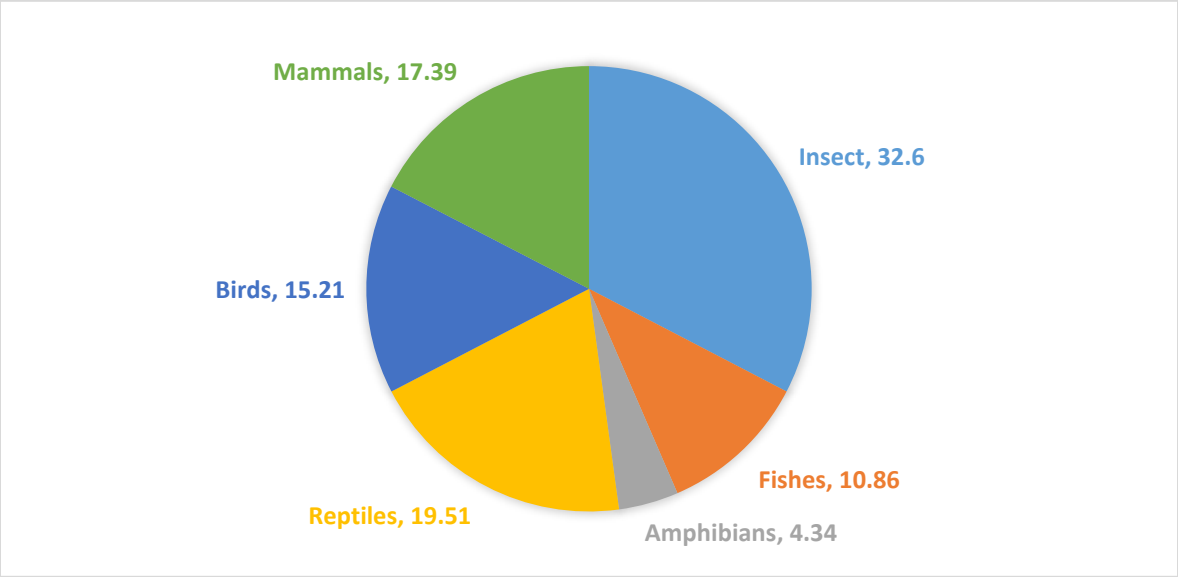

Figure 1. Percentage of animal categories being used in zoo therapeutic practices among the traditional healers in the district Swabi

From the current study it is concluded that animals is used for treatment of different diseases like diabetes. Asthma, pneumonia, piles, gastric, fever. Snake bite, cancer, Pox, etc. The use of whole animals for medicinal purpose was recorded to be the highest (36.11%), followed by other animals parts and byproducts like meat (11.5%), blood, head, alimentary canal, gall bladder/bile, horn, milk (each 8.1%) and heart, cocoon with larva (3.79%). it is mostly used orally than topically (Figure 2).

The present study showed that 7 modes of preparation for consumption used against diseases.in Raw form 29.9 % ,boiled 10.2%, cooked 6.2%, juice 4.3%), paste 9.2%, fried 26.1%, and smoke (21.1% (Figure 3). Vijay Kumar et al., 2015 also found that raw materials mostly used for therapeutic purpose [2].

Quantitative analysis

Relative frequency of citation (RFC)

RFC index was determined for finding out the importance of each species. The RFC Valve of Assamese snakehead fish was 0.67, which is highest among all. The lowest valve was 0.12 for Slenderan. The lowest valve of RFC does not means that it is of less importance but it shows that most of the peoples did not know about their uses.

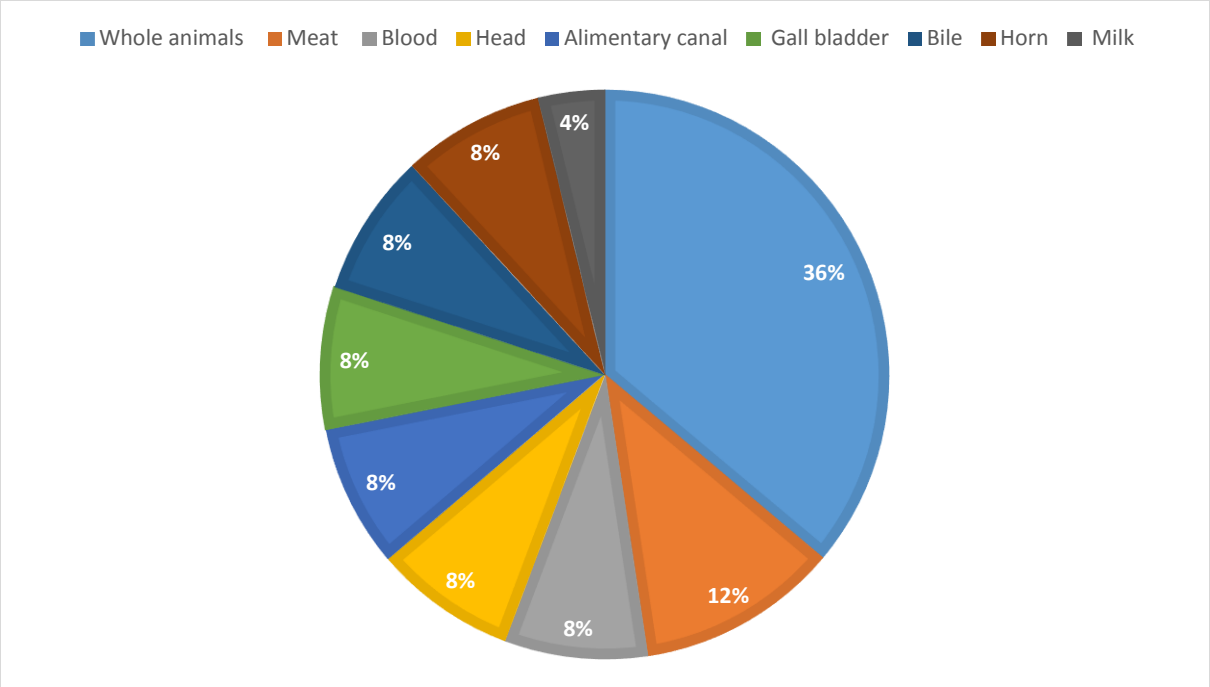

Figure 2. The use of whole animal and parts for Zootherpeutic purpose

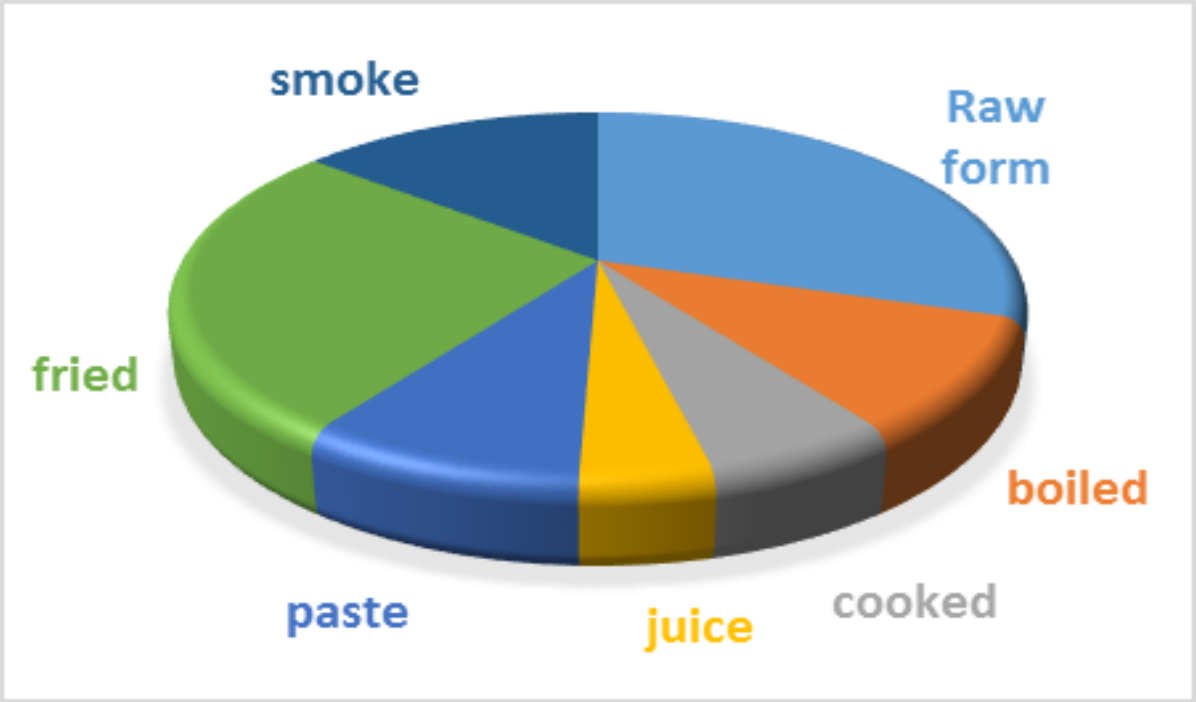

Figure 3. Methods of preparation of different animals and animals parts (%)

Table 2. Ethno zoological record of district Swabi Khyber Paktunkhwa, Pakistan

S. No.	Animal group	English name	Scientific name	Local name	Body parts used	Midicnal use	Application	RFC	% FL
1	Insect	Crab	*Allocantus yawi*	Keekrha	Whole body	Used as massage cream in muscular pain. anti-diabetes	Topical	0.23	33.3
2	Insect	Honey bee	*Apis indica*	Shahid ki makki	Honey	Eye disease Used as eye drops to cure eye disease	Topical	0.11	98.9
3	Insect	Crickets	Achaeta sp.	keekhra	Hind legs	Antidiuretic and for anti-diabetes	Oral	0.26	67.3
4	Insect	Cockroaches	*Periplaneta americana*	Laalbaig	Whole body	Asthma	Oral	0.51	56.1
5	Insect	Housefly	*Musca domestica*	Makki	Whole body	Baldness/ Bronchitis	Oral	0.21	40.1
6	Insect	Leaf-cutting ant	Atta.sp	Chewenti	Whole body	Tendinitis	Oral/ Topical	0.18	32.1
7	Insect	Stingless bee	Melipona sp.	Madoo makki	Honey	Throat inflammation	Topical	0.15	47.4
8	Insect	Stingless bee	*Trigona spinipes*	Madoo makki	Honey scuitellium	Acne, influenza, stroke	Topical	0.14	76.2
9	Insect	Scorpian	Tytius sp	Bichoo	sting	For to treat its own sting and for skin diseases	Topical	0.25	32.3
10	Insect	Dragon fly	anisoptera	anax	Feathers	Anti-cancer	Oral	0.21	54.5
11	Insect	Green tree ant	*Oecphyllas maragdina*	Tamoli paruwa	Whole body	Sinus Cancer Epistasis (Bleeding from nose)	Topical	0.21	43.2
12	Insect	Rice bug	*Leptocorisa varicornis*	Gandhi kira	Whole body	Fever	Oral	0.22	76.4
13	Insect	Silk worm	*Anth mensis*	Muga palu	Whole body	Weakness	Topical	0.27	53.4
14	Insect	House cricket	*Achetado mestica*	Uisiringa	Whole body	Pain improve pencrease	Oral	0.28	87.1
15	Insect	Bombardier beetle	Heropsophus	Poda paruwa	Whole body	Alcoholic habbit	Oral/ Topical	0.27	31.4
16	Fishes	Labeo Fish	*Labeo rohia*	Machli	Cervical vertebrae	Fish cervical vertebra is rubbed with water and this essence water is taken in urine blockage problem	Oral	0.37	11.2
17	Fishes	Assamese snakehead fish	Channastewartii	Chengeli mas	Whole body	Diabetes/ Bronchitis	Oral	0.67	32.1
18	Fishes	Magurma fish	Clariasbatrachus	Magur	Whole body	Body ache	Topical	0.54	21.5

19	Fishes	Roumas fish	Labeorohita	Rohu	Gall bladder (bile)	Gastric	Oral	0.42	32.1
20	Fishes	Prawn	*Macrobrachium malcolmsonii*	Jingha	Dried powder	tuberculosis	Oral	0.27	21.1
21	Amphibians	Toad	Bufo sp	Maindak	Skin/oil	Diabetes, Urinary retention	Topical	0.05	32.2
22	Amphibians	Frog	*Euphlyctis cyanophlyctis*	Maindak	Skin/oil	Diabetes, Anticancer	Topical/Oral	0.53	45.5
23	Reptiles	Hard shelled Turtle	*Kachuga tentoria*	Kechwa	Carapace Flesh	For chicken pox	Oral	0.46	43.3
24	Reptiles	Lizard	*Tropidurus torquatus*	Chipkali	Whole body	Rheumatism	Oral	0.52	65.1
25	Reptiles	Snake	*Russell's viper*	Saamp	Venome	For chicken pox	Topical	0.41	43.2
26	Reptiles	Chameleon Chameleon	*Chameleon zeylanicus*	Dagdaga	Tail	Elephantiasis Bound around leg to cure this problem	Oral	0.11	27.5
27	Reptiles	Greater rhea	*Rhea Americana*	Naja saanp	Fat	Anticancer ,for pain in muscles	topical	0.27	59.6
28	Reptiles	Uromastix	*Uromastyx hardwickii*	Barti chpkali	Back bones	Diabetes	oral	0.13	28.3
29	Reptiles	Slenderan	*Tetraponera rufonigera*	Mojali pruwa	Whole body	Body ache	Topical	0.12	19.4
30	Reptiles	Praying mantis	*Mantisre ligiosa*	Gaigini foring	Cocoon with larva Whole insect Whole body	Wound in ear Pneumonia	Oral	0.22	11.2
31	Reptiles	Stinging cat	*Heteropneustes fossils*	Singhimas	Whole body	Pain	Topical	0.27	23.4
32	Birds	Pigeon	*Columbus livia*	Kabutar	meat, fresh blood, feather	Paralysis	Topical	0.39	76.1
33	Birds	Indian pea fawl	*Pavo cristatus*	Mor	Feather, meat	Diabetes	Oral	0.71	34.5
34	Birds	Sparrow Bird eating spider	*Theraphosidae*	Parinda	Feather, meat	Magic ritual	Topical	0.12	23.3
35	Birds	Chicken	*Gallus domesticus*	Murghi	White of the egg Fat Body Soup	Nasal congestion to stop bleeding dysentery coughing	Oral	0.56	32.5
36	Birds	Ground-dove	*Leptotila sp.*	Fahta	Feathers. meat	Stroke	Topical	0.11	22.2
37	Birds	Jungle fowl	*Gallus sonnerati*	Jangli Murga	Testis	Male impotency Organ use orally	Oral	0.23	54.2
38	Birds	House sparrow	*Passer Domestica*	Gaonrani	Nest	Nest Ellery Fume apply in whole body covered with blanket	Topical	0.37	23.3
39	Mammals	Goat	*Capra indicus*	Bakkri	Milk, meat	For oral diseases	Oral /Topical	0.54	54.5

40	Mammals	Sheep	Capra.sp	bairh	Milk meat	For muscular pain	Oral	0.48	67.8
41	Mammals	Bird eating spider	Theraphosidae	Parinda	Feather	Magic ritual		0.72	51.4
42	Mammals	Lizard	*Tropidurus torquatus*	Chipkali	Whole body	For chicken pox	Topical	0.29	43.7
43	Mammals	Chicken	*Gallus domesticus*	Murghi	White of the egg Fat Body Soup	Nasal congestion to stop bleeding dysentery coughing	Topical	0.65	32.2
44	Mammals	Ox	*Bos torous*	bail	Feaces, meat	To make mosquitoes go away	Topical	0.61	62.8
45	Mammals	Indian bison	*Bos gaurus*	Jangli boda	Dung	Hair growth	Oral	0.31	43.2
46	Mammals	Camel	*Camilous domedarous*	Ont	milk	Muscular pain	Oral	0.65	56.7

Fidelity level (FL)

FL level is used to determine that most frequent and easily used species. There valve varies from 1.0% to 100% on response of interviewers most used and reported. The highest valve indicates that it that it is reported by all of the respondents [25]. Honey bee FL is 98.9 and for Praying mantis lowest valve of FL is 11.2.

Conclusion

Current study is the first ever study in Pakistan on zoo therapeutics. This study will help to maintain and record the traditional zoo therapeutic medicine. This will also help in finding novel biological active compound and discovery of new drugs. It will maintain biodiversity conservation and management strategies of animal resources for sustainable use.

Authors' contributions

Designed the experiments: G Rehman & WA Shams, Performed the field survey: Z Ullah & WA Shams, H Alam, N Gul, T Naz, SU Islam & AJ Khan, Analyzed the data: G Rehman , A Ali , K Khan & WA Shams, Contributed reagents/ materials/ analysis tools: S Niaz & S Ara, Wrote the paper: Z Ullah & WA Shams.

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