Ethnomedicinal Survey and its quantitative analysis of Bokaro District of Jharkhand.

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Abstract

Local Inhabitants (both tribes and non - tribes) in rural areas of Jharkhand rely on traditional medicines as their primary form of healthcare. A study was conducted in rural areas of Bokaro district of Jharkhand. The data was analyzed statistically. Relative Frequency Citation (RFC) value was found to be highest for ***Emblica officinalis*** (92.3%). Use Value (UV) was found to be highest for ***Ocimum sanctum*** and ***Madhuca indica*** (1.76).

Index Terms:- Ethnomedicine , Inhabitants , RFC , UV, Medicinal Plants.

INTRODUCTION :- Utilization of Plants for medicinal purpose in India has been documented long back in ancient literature because they are essential to human survival [Badoni 1995, and Bhatt 2002]. A number of plants are used by local inhabitants for the treatment of various ailments have been documented in Ranchi and adjacent districts of Jharkhand. [Haines, 1925.,' Hoffman, 1950., Bressers 1951., Ghosh 1971., Sahu 1986]. A comprehensive investigation has been carried out in the area and the medicinal uses has been correlated with the use in various parts of the country (Jain, 1991). Related work has been done in Hazaribagh district of Jharkhand (Tomar, 2002) which indicate that more than 70% of the total population of the state is exclusively dependent on the herbs and traditional healers for maintaining a reasonable level of heath. The state is rich in biodiversity of medicinal plants and their traditional uses (Mairh et.al. 2010, Lal and Singh 2012).

The paper deals with the study of knowledge of local inhabitants about the medicinal use of plants and it's statistical analysis.

The present investigation carried out in Bokaro district represents the first quantitative exploration of the area.

STUDIED AREA

The state of Jharkhand lies in the eastern part of India and has 28% of the population of scheduled tribes. Out of the total geographical area of the state29% is occupied by forest. The state is geographically known as Chotanagpur plateau, which forms the north eastern portion of Peninsular plateau of India (Bhatt, 2002). Bokaro district lies in the eastern portion of the state of Jharkhand in India. It is bounded by Giridih District in the North, West Bengal in the South, Dhanbad in the East, and Hazaribagh in the West. The total geographical area of the district is 2,861 sq. km. There are 9 blocks in the district.

ETHNOMEDICINAL DATA COLLECTION

The field data was collected during the period (July 2013 to August 2015).

Survey was done by both (A) Direct and (B) Indirect Method. The Method used for data collection are (I) Informal or qualitative methods as (a) Participant observation (b) Interviewing the local informant.

(II) Formal or quantitative methods which included semi-structured interviews, random sampling, surveys and analytical tools and methods of surveying visually. [Gleano (2000), Hana zaki, N. et. al. 2010 , Albuquerque , OP. et.al. 2014].

It was started in rainy season and collections were repeated every two months of the year. Field work consisted of data documentation, plant collection and photography. A combination of focus group, individual interviews, field – walk / discussions and local market survey was conducted with a tertiary educated translator present at each session. A total of 35 men 25 women and 5 vaidyas (traditional healers) were interviewed. Most of the informants belonged to an age between 50 and 70 years. The selection of informants was mainly based on their rich indigenous knowledge and long term experience of utilization of plants. The informants were asked various questions about their traditional knowledge, plant use, disease treated, part used and the method of preparation and administration.

During the field visit, survey of data collection was made in different places i.e., waste lands, bare lands, play ground, road side, agricultural farms and near other localities. The collected samples of plants were brought to the department for identification. The serial number,

vernacular name, botanical name, family, part used, life form and their medicinal uses were noted. The identification of plant material was carried out with the help of Haines, Flora (1925)

MATERIALS AND METHODS

Descriptive Statistical method was employed to analyze and summarize the ethnobotanical data on reported medicinal plants and associated knowledge (Philps, Wilkin, Durand 1994)

I QUANTITATIVE ETHNOMEDICINAL DATA ANALYSIS

Relative Frequency Citation (RFC)

It was calculated as given by (Tardio and Pardo–de Santayana, 2008)

The collected ethnomedicinal information was quantitatively analyzed using an index of relative frequency citation (RFC) as;

$RFC = FC/N \ (0 < RFC < 1)$

This index shows the local importance of each species and it is given by the frequency of citation (FC, the number of informants mentioning the use of the species) divided by the total number of informants participating in the survey (N), without considering the use-categories.

Use Value (UV)

It was calculated as given by (Gazzaneo et. al. 2005)

The Use Value (UV) demonstrates the relative importance of plants known locally. It was calculated using the following formula $UV = \sum Ui/N$ Where Ui is the number of uses mentioned by each informant for a given species and N is the total number of informants.

RESULTS AND DISCUSSION

Different work on plant parts used as medicine have been reported in Hazaribagh district of Jharkhand (Tomar 2002, Lal and Singh 2012).

In the present work a total of 99 plant sps. belonging to 90 genera of 51 families were recorded with traditional uses as herbal medicine against various diseases. The most encountered

medicinal plant families were Euphorbiaceae (8 sps.), Lamiaaceae (6 Sps.) Moraceae (5 sps.), Catharanthaceae(4 sps.), Caesalpinaceae (4 sps.), Rutaceae (4 sps.) and Fabaceae (4 sps.) each

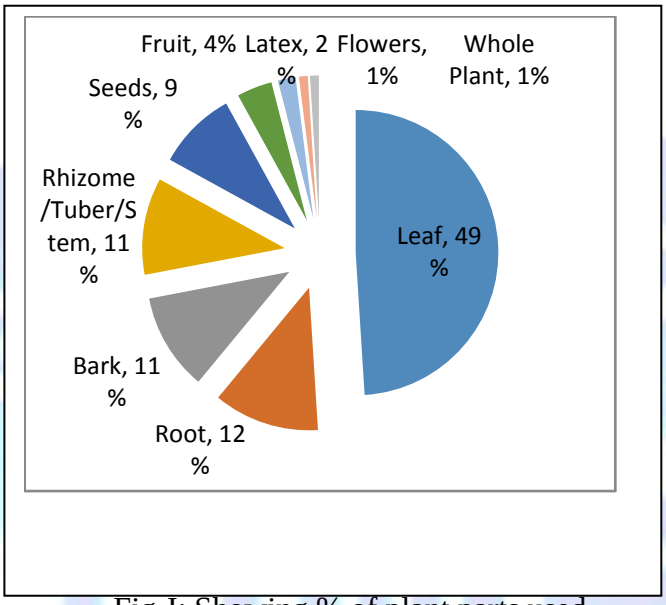


Fig-I: Showing % of plant parts used

The parts of the plant primarily used are the leaves (49%), Roots (12%), Bark (11%), Rhizome / tuber / stem (11%), Seeds (9%), Fruit (4%), Latex (2%), Flowers (1%) and whole plant (1%) are also frequently used. (Fig. I)

It was found that the highest number of plant species are used against stomach ache (12 sps.), followed by Rheumatism (11 sps.), Worms (10 sps.) for diarrhea and dysentery (8 sps.) for treatment of Jaundice (7 sps.), as a tonic and for skin diseases (6 sps.) each, for cold and fever, asthama and menstrual problems (5 sps. each) for teeth problems, snake bite and eye problems (3 sps. each) while for sore throat, pneumonia, epilepsy and brain disorders, typhoid, scorpion and insect sting as well as for hypertension (2 sps.) each are used.

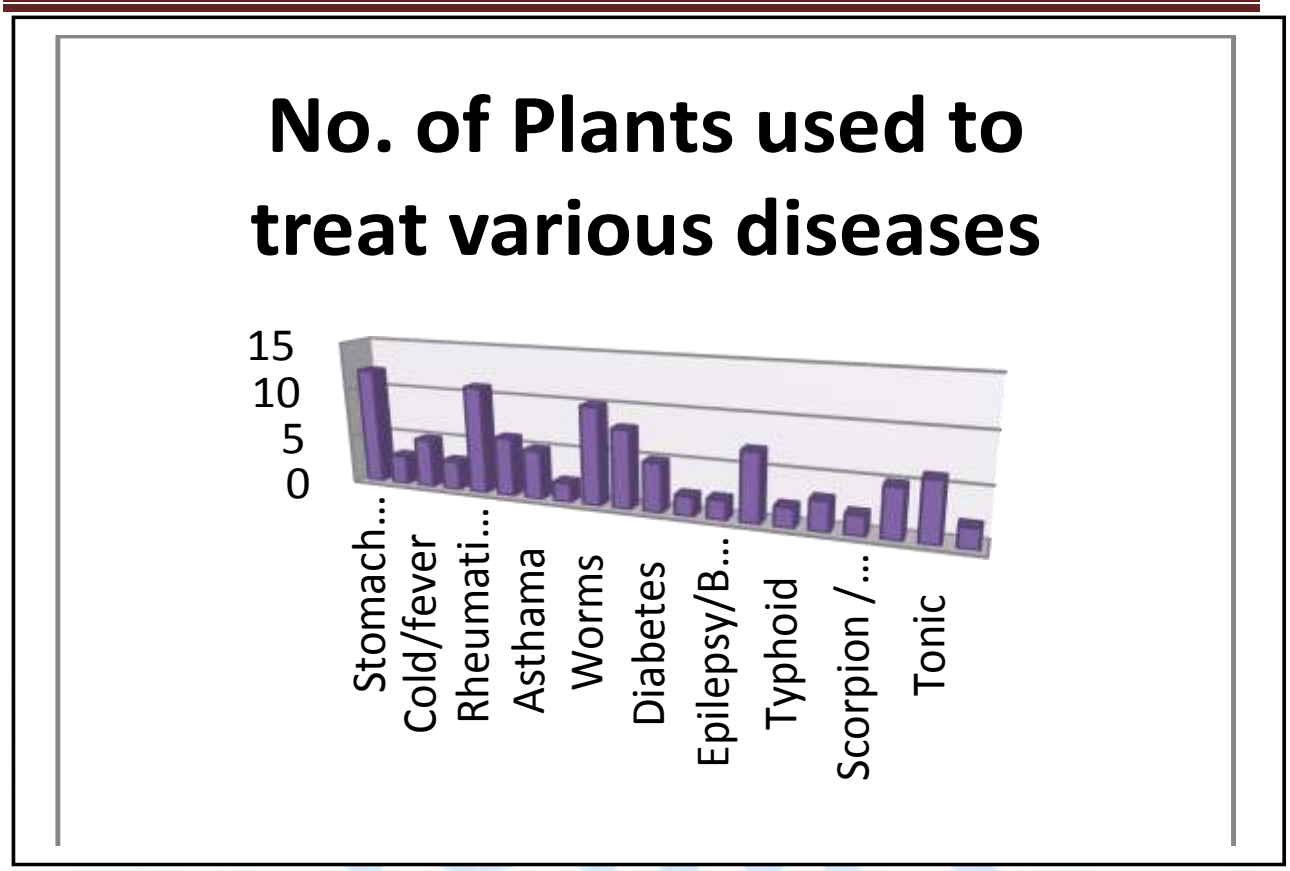
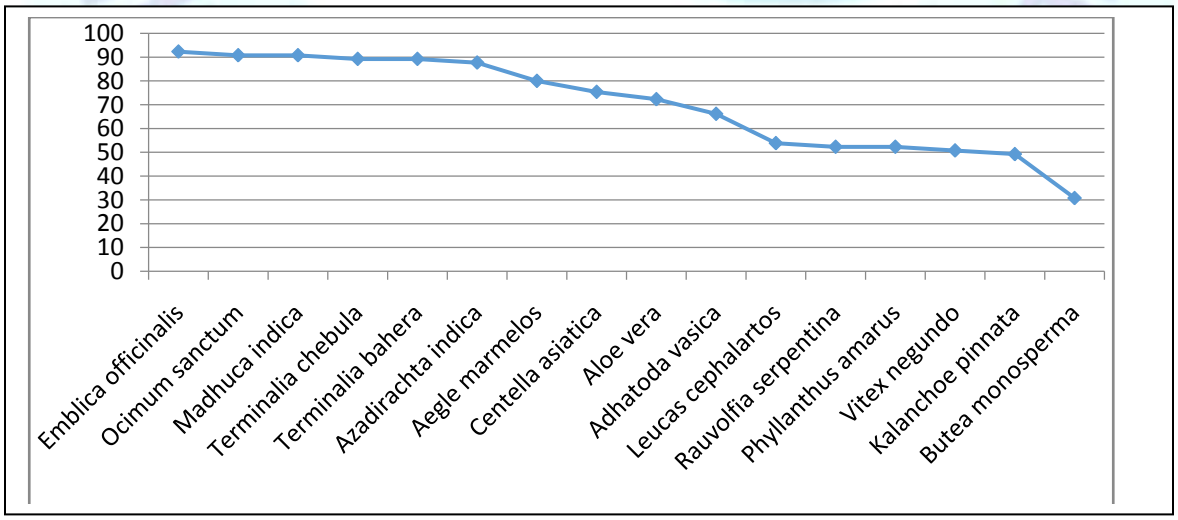


Fig-II Showing number of plants used to treat various diseases

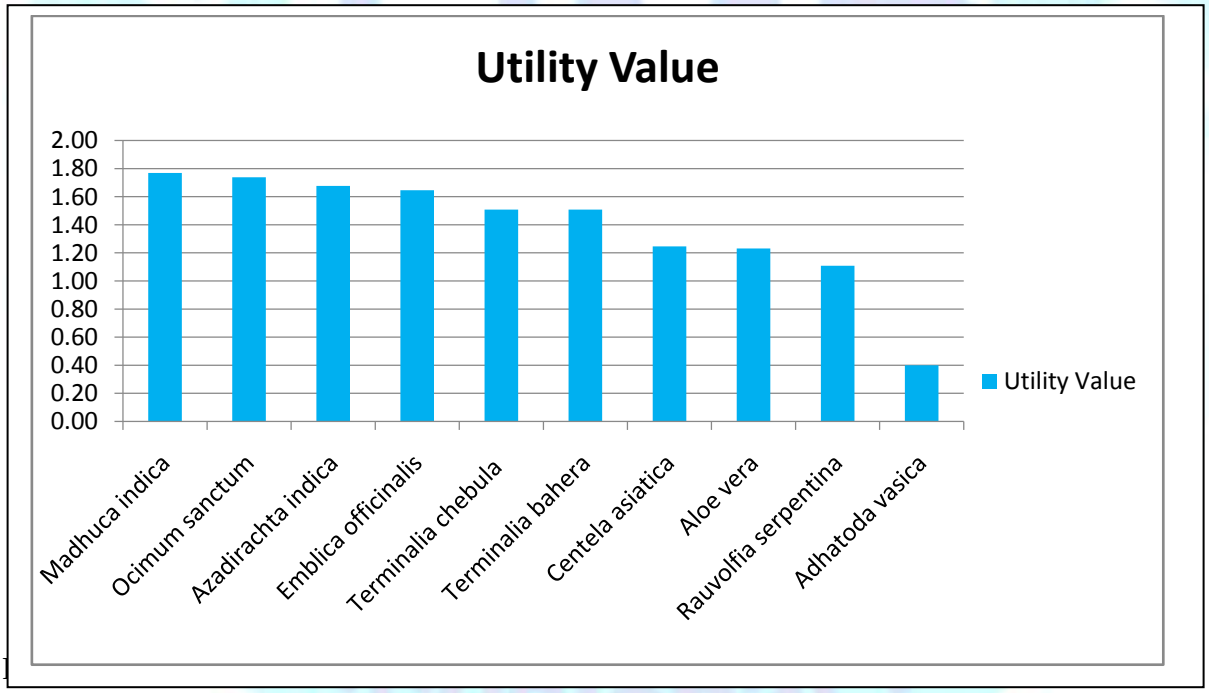
Recently similar results have been obtained by (Ramalingam, Parthiban , Kumar et. al. 2016) in Tamil Nadu on plant parts used for the preparation of ethnomedicine.



I QUANTITATIVE ANALYSIS.

Quantitative value indices were calculated in this study to analyze the ethnomedicinal information. There were 16 most cited plants knows by a majority of the informants for medicinal uses.

Emblica officinalis ranked first (92.3%) in RFC, followed by ***Ocimum sanctum, Maduca indica*** (90.7%), ***Terminalia chebula, T. behera*** (89.2%) ranked third.These positions correspond to the fact that these plants were reported by highest number of informants mentioning the use of this plant.The value of RFC ranges from 30 percent to 92 percent in the present work on the medicinal use of these plants / herbs. The former is linked to ***Butea monosperma*** from the family Fabaceae while the latter is associated with ***Emblica officinalis*** from family Euphorbiaceae. However on overage the relative frequency of citation is 66%.



plants with highest use value reported by the informants. It shows ***Madhuca indica and Ocinum sanctum*** has highest use value (1.76), followed by ***Emblica officinalis*** and ***Azadirachta indica*** (1.64) and ***Terminalia chebula*** and ***T. behera. Ocinum sanctum*** is extensively used in the treatment of cold and cough, fever and in combination with other plants for the treatment of epilepsy, malaria, and poliomyelitis while ***Madhuca indica*** is used to control temperature, gas, chicken pox and dandruff besides making alcoholic beverage.

II. The **UV** of studied plants ranged from 0.46 to 1.76 which shows least relative importance of ***Adhathodavasica*** from family Lamiace highest importance to ***Ocimum sanctum*** and ***Madhuca indica*** from families Lamiaceae and Sapotaceae respectively. These findings are in consistent with that from RFC.

Works have been done on quantitative analysis of elthnomedicinal plants in different parts of India and of world [Bano et. al. 2014, Parthiban, R. , Vijay Kumar et. al. 2016, Prabhu, S., Vijaykumar , S., et. al. 2014, Tardio and Pardo – de Santayana 2008, Gazaneo et.al. 2005].

However as the distribution of medicinal plants and of plants as a whole show variation on the basis of physical and physiological factors. Therefore the results show variation from the works done in other places.

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