Database Development for Medicinal Plants of Sattari Taluka

A Dissertation for

Course Code and Course Title: LIS 651 & Dissertation

Credits: 16

Submitted in partial fulfilment of Masters / Bachelor's

Degree in M.LI.Sc.

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DECLARATION BY STUDENT

I hereby declare that the data presented in this Dissertation report entitled, "Database Development for Medicinal Plants of Sattari Taluka" is based on the results of investigations carried out by me in the Master Library and Information Science at the D. D. Kosambi School of Social Sciences and Behavioral studies, Goa University under the supervision of Mrs. Novelty Volvaikar e Morjekar and the same has not been submitted elsewhere for the award of a degree or diploma by me. Further, I understand that Goa University or its authorities will be not responsible for the correctness of observations / experimental or other findings given in the dissertation.

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Kunika K. Gawas

Seat No.: 22P0010008

Date: 19-04-2024

Place: Goa University

COMPLETION CERTIFICATE

This is to certify that the dissertation report **"Database Development for Medicinal Plants of Sattari Taluka"** is a bonafide work carried out by Miss. Kunika K. Gawas under my supervision in partial fulfilment of the requirements for the award of the degree of **M.L.I.Sc.** in theDiscipline Library and Information Science at the D. D. Kosambi School of Social Sciences and Behavioral Studies, Goa University.

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Date: 19/04/2024

Place: Goa University

ACKNOWLEDGEMENT

I am deeply in debt to many people in completion of this dissertation.

In a very special way, I would like to appreciate and thank my research guide, Mrs. Novelty Volvaikar e Morjekar. From the very outset, she has taken interest in the study and provided the necessary encouragement and guidance.

I owe a deep sense of gratitude to all the library staff of Goa University for allowing me to use the library resources and the staff and faculty of the Library and Information Science Department for their kind help and co-operation throughout my study.

In a very special way, I am thankful to my family for their immense trust and persistent support in all my endeavor.

And above all, Last but not least attribute the successful completion of this dissertation to God for giving me the strength and energy, without which I would have not been able to complete the dissertation.

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CHAPTER 1

INTRODUCTION

1.0. Introduction

Medicinal plants have been used for several years by ancient people. In ancient times people used to prepare products from herbs for their benefits and to maintain their good health. They used parts of plants or whole plants as a medicine. Therefore, the plants were found in the forest, people started to cultivate in their home garden to get benefits from medicinal plants. Herbs, play a significant role as medicine, as they do not have any side effects. Due to introduction of allopathic medicine in the modern era the knowledge on medicinal plants is disappearing. It is become important to put pressure on conserving, managing indigenous knowledge and herbal plants.

Local medicine practitioners which are living in villages possess great knowledge on herbs and its preparation. Even though they do not have well developed knowledge but they can formulate the medicine for certain disease. They are familiar with the environment in which they are living and acquire knowledge from the environment. Medicinal plants grow naturally around us. Over centuries, communities around the world have learned how to use plants to fight illnesses and maintain health. Medicinal species that residing in natural areas have received scientific and commercial attention, there is increasing pressure on the wild plants, of which medicinal plants are harvested and people are exploring these plants for their purpose. It is observed that most of the medicinal plants are found in Sattari Taluka of Goa. Sattari is one of the pleasing Taluka of Goa which is covered with dense forest of Sahyadri Parvat Mala and Chorla Ghat and it is famous for waterfalls, Jungles and several natural sites which have become the attraction of tourists.

Ethno medicinal uses of plants known to people since ancient times. There are several uses of medicinal plants used by the people to maintain their daily routine. Biodiversity is the fundamental base for human survival and financial well-being, where whole people, families, communities, nations and future generation depends upon this biodiversity for the development. Therefore, proper care and management of biological source should be taken, keeping in mind that it will be helpful in upcoming generation. There are around 8,000 species of medicinal plants are exist in India from which 70% of medicinal plants are available in tropical forest of various forest types of Western Ghats, Eastern Ghats, the Vindhyas, Aravalis and the Tarai regions etc.

Local people, traditional healers have developed symbiotic relationship and emotional attachment with the environment and resources they are using from the environment. These people protecting and maintaining the resources for their usage. The local people of Goa have a great knowledge on medicinal properties of plants to treat against various ailments. Due to population explosion, urbanization, modernization in the daily life style, medicinal plants found in Goa are disappearing, which may affect human health care. So, it is become necessary to document the traditional knowledge on medicinal plants which local people have retain in their culture. For this purpose, the study conducted for the metadata development of medicinal plants, also it documents medicinal properties of Plants.

1.1. Background of study

An indigenous knowledge has been transferred over a several past years. Due to interaction with natural environment, the local people are adapted and grow with environmental changes. The ancient people have ability to interact with natural ecosystem. This correlation between people and the environment forms a product of knowledge transmitted generation to generation. The researcher defines indigenous knowledge of locals as well as medical knowledge of medical practitioners. The study detailed about medicinal plants. The researcher investigates that medicinal uses of plants used by the local communities from the selected area. Collected information later listed out using table in an alphabetical order. Additionally, database of plants was created by using Google sheet including botanical name, division, class, order, family, genus, species were identified and further it converted into awesome table to make it publicly available. Similarly, a WordPress site was created for ready reference source for the students, plant users as well as researchers.

1.2. Significance of study

In this modernization world. The youth of this generation diverted towards chemical based medicine and ignore natural curing system in the surrounding. The concept of Ayurveda first discovered in India. Since then, the ancient people come up with great knowledge by experimenting it on the patients or even on the animals. These people know to fight illnesses and maintain proper healthcare. Earlier, when there was no

medical practitioners were available, the locals from the villages act as a Vaidya (Doctors) to maintain daily routine. No doubt, illnesses were cured by ancient people as they have remedies for each and every disease. Therefore, medicinal plants are residing in area should receive scientific and commercial attention. Traditional communities are residing in various regions of Goa, has variation in the preparation of medicine. To study the variations in the knowledge system is important for conservation and preservation of medicinal plant species and also preservation of indigenous knowledge of certain regions. The loss of plant species, will also loss of traditional knowledge among youth. It is estimated that every year earth is losing plants. So, it is urgency to document such knowledge as well as nature in our surrounding. A research is the only way to document traditional knowledge or otherwise it will be lost due to demise of ancient people.

1.3. Objectives

The objectives of the study are;

- To study the species of Medicinal plants found in Sattari area of Goa.
- To identify Medicinal properties of each part of plant.
- To study benefits of plants to cure several ailments in human beings.
- To develop metadata for the medicinal plants based on the findings.
- To develop a framework for knowledge management of information on Medicinal plants.

1.4. Scope and Limitations of the Study

The present study is conducted to determine medicinal properties of plants and their use in curing several ailments. The study also generates metadata of plants with help of nomenclature and physiology of plants.

1.5. Research methodology

I) Population of the Study

The study will be considering the Medicinal plants found in Sattari area of Goa.

ii) Methodology

The study covers medicinal plants of Sattari taluka of Goa. This is pleasant place which covered with mesmerizing beauty of Plants and forms the residence for various fauna. It attracts the human eyes and hence, considered adventurous place for tracking and hiking.

The study was conducted during 2023-2024. For the proposed research the information was collected from local medicine practitioner in the villages of Sattari taluka of Goa as well as from Subject experts, Ethno botanists, related directors and Local medicine practitioners.

Additionally, to collect data medical practitioner from Shiroda (Gomantak Ayurveda Mahavidyalaya and Research Centre) as well as medical practitioner from Bicholim area were interviewed through open ended questionnaire. The collected piece of information was based upon medicinal properties of plants, parts used, local name, botanical name etc. All the respondents have answered eagerly and shared the knowledge enthusiastically.

Information were collected through open ended questionnaire where face to face interviews were conducted of elderly people from the villages who have traditional knowledge about medicinal plants. Followed by several field visits were conducted in the Sattari villages as well as Satpal Arboretum, Satpal and Biodiversity Park, Mollem to collect the pictures of the plants. To develop a metadata, the pictures of plants' part such as leaves, stem, fruit, and flower were clicked using mobile phone.

The collected species of plants were classifying with the help of taxonomical hierarchy including botanical name, kingdom, division, class, order, family, genus and species. To identify more specifically, the list of plants' names were tabulated including English name, Konkani name, Botanical name and Sanskrit name. To make it publically available taxonomical hierarchy of plants was tabulated in Google spreadsheet in alphabetical order and adapt to awesome table. To give access the research in online mode, the collected information available online through the WordPress site.

1.6. Organization of Study

Chapter 1 – Introduction

Chapter 2 – Literature Review

Chapter 3 – Concepts

Chapter 4 – Data Analysis and Interpretation

Chapter 5 – Major Findings and Suggestions

Chapter 6 – Conclusion

Chapter 7 – References

1.7. Conclusion

The study will help to conserve the valuable knowledge of medicinal plants, or else will be lost, due to modernization and sudden move towards chemical based medicines. Medicinal plants widely known for their curative effects on certain diseases as it has no side effects. The study also determines botanical character of medicinal plants, general character, properties, composition and uses of its parts which are employed in medicine.

1.8. References:

Keshari, D. S., & Bishnupriya, M. (2022). Ethno-medico-botanical claims of Bondla wildlife sanctuary vicinity of Goa. *Journal of Ayurvedic and Herbal Medicine*, 14-17. doi:10.31254/jahm.2022.8105

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CHAPTER 2
LITERATURE REVIEW

2.0. Introduction

For any dissertation work a study of past happening is of prime importance. Hence a serious literature search should carry out to know about history development and the future trends of the topic. The aim of literature review is to summarize and synthesize the ideas of existing knowledge in a particular field without adding any new contributions. It provides an overview of current knowledge, allowing us to identify relevant theories, methods and gaps in the existing research. It is designed to provide an overview of sources were explored while researching a particular topic and to demonstrate to readers how your resources suitable within large field of study. Following literature were referred and browse to complete the study.

2.1. Literature Review

The study conducted by **Irfan, M., Ullah, F., and UI Haq, I., (2023)** in Pakistan. The purpose of the study is to identify the traditional knowledge and uses of medicinal plants in curing diseases. The locals of Pakistan region are depends on medicinal plants found in this region. The traditional knowledge was collected using questionnaire and interviews of elder people who possess knowledge on traditional uses of medicinal plants. A total of 147 taxa belonged to 106 genera and 57 families were reported. They found Parts of plants such as leaves, stem is use and oils extracted from seeds and gums for treating ailments.

Hussain, K. et.al (2023) conducted study on orchid species found in western Himalayas of Azad Jammu and Kashmir. Orchids have great importance due to their several medicinal properties. The local communities from there have been used orchid species for centuries to get medicinal benefits. The objective of this study is to identify and document ethno medicinal uses and find conservation status of medicinal orchids used by local people from Azad Jammu and Kashmir with the help of semi-structured questionnaire. They found 18 orchids species that have significant value. According to this ethno botanical study, the native people from these regions have great knowledge on orchids and plants, this unique knowledge of native people need to be protected.

Quantitative ethno medicinal study conducted by **Hussain, S.et.al (2023)** based on wild edible fruits used by Indigenous people for their health care as well for daily food requirements as these people are lack of medicinal facilities, for which they rely on wild edible fruits. This research summarizes the data about 43 wild edible fruits. These wild edible fruits used to treat 36 human and animal diseases in Surghar range, Pakistan. Compelling semi- structured interviews were conducted with the respondents, and complete data were recorded on questionnaires. The present study demonstrates that almost all the wild fruits have medicinal value, some of the fruits recorded to have highly medicinal in Surghar range. This work will be helpful for local inhabitants to conserve documented medicinal plants.

The ethnobotanical study conducted by **Zhou, H. et.al (2023)** in China based on medicinal plants used by Bulang people. The study recorded 60 medicinal plant species belonging to 41 families and 59 genera collected from 175 local informants in the interviews and distribution of questionnaires in 10 Bulang villages. The study concludes Bulang communities primarily source medicinal plants from the wild. Due to environmental damage extinction of medicinal plants. Bulang ethno medicine is a vital supplement to China's traditional medicine, particularly aspects of ethnic medicine relevant to daily life.

An ethnobotanical study of medicinal plants by **Tahir, M. et.al (2023)** in Northeastern Ethiopia. The people from this region have rich knowledge of medicinal plants. The study was conducted from September 2018 to April 2019. A total of 367 informants were interviewed, followed by group discussions and guided field walks were conducted. A total of 103 medicinal plant species used to treat human ailments were recorded. They observed the most frequently used plant's part were leaves followed by seeds.

Ullah, F., Irfan, M, and Saeed, M. (2023) their study states ethno botanical uses of the plants in the district of Wahid, Khyer, Pakhtunkhwa, Pakistan. The information about traditional uses of medicinal plants were collected through questionnaire and frequent

field visit were conducted in different season from the year 2019 to 2022. A questionnaire was made to record the knowledge of rural men, women followed by their families regarding the usage of medicinal plants in their community. Women were seldom interviewed, which was the unique opportunity to record the plant knowledge. A total of 154 plant taxa found used for the treatment of various ailments.

Essandoh, P. K., Aku Dali, G. L. And Bryant, I.M (2023) their study documented the medicinal plants. A total of 132 medicinal plants species was recorded using structured questionnaire. The ethnographic method using semi-structured questionnaire, interview and group discussions. They found most commonly used plants part were bark, the disease they commonly treated was malaria, they use drug in the form of decoction. Conclusive details the integration of traditional medicinal plant into the health care system needs Ghana government alteration in the study area.

Ethnobotanical study of medicinal plants by **Kacholi, D. S., Charwi, M. Z. and Mogha, N.G (2023)**. This study is limited to medicinal used for treatment of urinary tract infections in Mara region Tanzania. Rural communities in this region rely on medicinal plants for their health care. The primary objectives of the study are to document the unique knowledge of Kuria traditional healers used in treating urinary tract infections, data were obtain using semi-structured interview and field walks. A total 20 medicinal plants were recorded. Also conservation status of medicinal plants was recorded from IUCN Red list online database.

Ethno-gynecological study conducted by **Khadim, S. et.al (2023)** to elaborate the details on traditional therapeutic plants uses by the indigenous communities to treat various gynecological diseases by locals from Gujarat Punjab, Pakistan. They record a total of 59 plant species to treat 40 gynecological disorders form 110 randomly selected local informants through semi-structured questionnaires and face-to-face interviews. The research documented common irregular menstruation is common health problem. The results of the study serve as a baseline for advanced pharmacological and phytochemical screening pertaining to gynecological disorder.

An Ethnobotanical survey of medicinal plants used for the treatment of diabetes conducted by Uwimbabazi, **M. et.al (2023)**. Type 2 diabetes mellitus is increasingly become health problem in Uganda area. The option for treating diabetes is physical exercise, medicine and consuming good diet. The objective of this study is to document medicinal plants used for managing Type 2 diabetes Mellitus in Uganda. It documents 71 medicinal plants used for curing diabetic condition, collected from traditional medicinal practitioners through purposive and snowball sampling techniques and interviewed using semi structured questionnaires.

Sousi, M. et.al (2023) they conducted a comparative ethno botanical survey of some species of plants in three zones of Morocco. This study focus of compilation of data of specifically uses of three medicinal plants that Pimpirella animus L., Coriander Sativum L., and Corum Carvi L. in three region of Morocco. For this study data were collected from selected region from 2019-20. The study analyzed the collected data by employing graphic, descriptive indicators and multivariate tests. Also analyzed therapeutic uses. Locals from study area using three species for therapeutic purposes. They found most of the people use plant in their dried form as a medicine.

Fayisa, k. (2023) had conducted a study in Ethiopia. According to him traditional healers in Ethiopia rely on medicinal plants for treating human ailments. The ethno botanical and ethno pharmacological survey has been conducted to document medicinal plants studies in the study area. A total of 525 medicinal plants were recorded from 113 families and 333 genera. They found wounds, malaria, stomachache and diarrhea are the common health problems treated using medicinal plants. For the treatment plant material use in the form of crushing, decoction and administered orally.

Idm'hand, E., Msanda, F., and Cherifi, K., (2023) this study were conducted to identify ethno botanical and pharmacology of medicinal plants specifically for gastrointestinal disorders. The main objectives of the study are to document methods of preparation and administration of recipes, the pharmacological properties and the

chemical constituents of each plant. Information was obtained from review of literature available on electronic databases such as Google scholar, PubMed, Scopus, Web of Science, Springer-link and MEDLINE. A total of 216 plant species from 65 families found used in traditional medicine to treat various digestive diseases.

Rehman, S. et.al (2023) conducted study on medicinal plants used by inhabitants of tribal district. The aim of the study to highlight traditional knowledge of unexplored area. In this research information were gathered from 130 informants via face to face interviews as well as semi-structured questionnaire. A total of 206 medicinal plants species were identified and recorded used by the native of that area. Leaves are most frequently use part of a plants. Maximum plants were recorded for constipation. The study area possess indigenous health professionals have rich knowledge on medicinal plants and its utilization.

Ayub, M. et.al (2023) their study on ethno-medicinal in sellable Pattaya Valley elaborates on folk knowledge on medicinal flora. For the present study data were gathered from randomly selected informants in the study area. 111 plant species were documented they found leaves are plays significant role as a medicine. No side effects were recorded with proper recipes. Locals in this area rely on herbs due to easy availability and low prices.

The quantitative ethno-gynecological study was conducted by **Zareef, H., Salim, F.M., and Quereshi, R. (2023)** which documented the indigenous knowledge of medicinal plants used for treatment of various gynecological disorders by herbalist. During this study the usage of medicinal plants were recorded through semi structured interview of 600 informants from different age groups. They recorded 60 therapeutic plants used by traditional communities of selected study area to cover various gynecological disorders.

Mustafa, A. et.al (2023) had conducted ethno botanical study of medicinal plants as medicinal plants are rich in sources of bioactive chemicals. The main objective of this

study is to document traditional uses of medicinal plants used by locals from study area of Pakistan. Data were collected through face to face interviews via semi structured questionnaire and group discussions. 140 plant species were recorded in the study area. The conclusive details include indigenous people used medicinal plants in their daily life for treating various disease they face. This research helpful for local government to protect the natural resources. Interview of shepherds, students

The study conducted by **Muratovic, E. et.al (2023)** on dichronic changes in the use of medicinal plants from Middle Ages until today were studied. They interview randomly selected 1211 respondents. The study documented 145 plant species utilize by local people for medicinal purposes. Diachronic changes in traditional medicine in study area resulted in a decrease in indigenous knowledge about autochthonous medicinal plant species.

The present study conducted by **Waheed, M. et.al. (2023)** marginalized communities in the reserved forest of Punjab. Their study summarizes the traditional knowledge of people living in reserved forest semi-arid region of Punjab, Pakistan. A total of 82 plant species were documented through open-ended questionnaire. The study participants were selected using randomly sampling techniques. The studied plants were noted for their efficacy in addressing 30 distinct ailments. The conclusive details include, decline has been observed in the count of herbal practitioners, with the successors displaying diminished interest in the field of due to demanding work and limited profitability. As a result, the revitalization of existing traditional practices could potentially be achieved through initiatives such as organic development, cultivating ethno species in home gardens, and establishing collaborations with herbal industries.

Zineb Laaziza Sekkat, Hassikou, R., and Skalli, S. (2023) conducted ethno botanical study based on used of medicinal plants among diabetic patients in Morocco. Study also observed that diabetes mellitus is common in Morocco. The purpose of the study is to provide locals ethno botanical information on the use of medicinal plants for regulating diabetes. In this study semi-structured questionnaire were source to collect data, and

especially diabetic patients were targeted. To analyze socio-demographic data chi-square test were used. 82 medicinal plants from 38 botanical families were recorded. They also found some plants are specifically used for type 1 and type 2 diabetes.

The study conducted by **Khoza, N., et.al (2023)** based on medicinal plants used to treat maternal and pediatric health related ailments. The study has been conducted first time in this region of South Africa. This study aimed to identify use of medicinal plants by traditional healers for specific maternal and pediatric related conditions. The data were collected in the year July and October 2021 through semi-structured questionnaire and guided field walks with traditional healers. Collected plant specimens from wild and identified them using existing literature. The study record 19 plant species from 13 families commonly used to treat maternal and pediatric ailments.

Mwalati, L. (2023) this study identifies and document the medicinal plants used by people in western Kenya and also explore traditional knowledge. The study observed the ethno botanical knowledge in this area is lost due to usage of modern medicine. Data were collected through semi-structured open-ended questionnaire, the survey was conducted between July and December 2022, the study recorded 62 vascular medicinal plants species from 30 families. Crushing was the highest recorded mode of preparation.

The study conducted for the first time by **Servat Rahim, Shah, A. and Iqbal, S. (2023)** to document and investigate uses of medicinal plants by indigenous ethnic communities of Pakistan. Data were documented by using semi-structured questionnaire open ended interviews and field surveys. Demography from March 2017 to September 2020 from 500 informants. A total of 417 plants belonging to 89 families were documented used by ethnic communities. Herbal remedies were used in the form of decoction.

Yogeesha A. and Krishnakumar, G. (2023) conducted study in Western Ghats region of Dakshina Kannada district, Karnataka to identify usage medicinal plants over neurological disorders by tribal people and ethnic groups in this region. Semi structured

questionnaire, interviews and discussions with traditional practitioners. The study recorded 143 plants species use to treat neurological disorders, among this plants 101 were wild and 42 were cultivated. Leaves of the plants were widely use to prepare medicine. Conclusive details include plants were documented to conserve the traditional knowledge of herbal products as documentary evidence.

The study conducted by **Pradhan, B. and Swarnendhu, M. (2023)**, to estimate the usage of medicinal plants among Santal tribal people. Documentation of usage of medicinal plants was carried out by ethnobotanist from various parts of the world. This study identifies the potential medicinal plants and their uses in curing diseases. They identified almost 34 different diseases and ailments of humans as well as veterinary animals treated by using a total of 40 ethno medicinal plants species. The study concludes that list of important plant species. It also caters, there is an urgent need to acknowledge local knowledge holders and preservation of associated phytoresources of the study area which has not been addressed till date.

The study conducted by **Mir, T.A. (2023)**, on utilization of medicinal plants among three linguistic groups in the selected study area of Jammu and Kashmir. Local people from these regions due to lack of modern health care facilities, people are totally depending on herbal plants that found in their area. Kashmir communities of three different districts of Jammu and Kashmir have a great traditional knowledge which was received from their ancestors. The proposed study documented 80 medicinal plants used for treating various diseases. The data were collected through snowball sampling using semi-structured questionnaire. The present study also concludes; disappearance of traditional knowledge is impending. To assess and retain this native knowledge for the invention of innovative new treatments, more phytochemical and pharmacological research should be done on the plants that are reportedly utilized by all of the groups.

An ethno botanical survey conducted by **Issam Ghabbour et.al (2023)**. The total of 91 taxa identified based on ethno botanical survey carried out between March and October 2021 in Taza, northern Morocco. The study documents 61 medicinal uses of

plants to 14 disease groups using semi-structured questionnaire. The study concluded people from African countries are unable to access drugs. Thus quantitative ethno botanical studies are needed in this area.

The study conducted in southwest China by **Liu, S. et.al (2023)**, states that Shui people living in China has accumulated and developed rich traditional medicinal knowledge which has played a significant role in their healthcare. This study aims to gather the information about medicinal plants and various ailments treated with medicinal plants by local healers and unique aspects of their preparations to provide useful knowledge and to conserve and preserve traditional medicinal knowledge of Shui people. A total of 505 species in 405 genera and 156 families of medicinal plants were documented in the Shui communities.

Dilbar, S. (2023), her study focuses on uses of medicinal plants for the treatment of respiratory disorders. This study states that the people living in Pakistan region are rely on medicinal plants for treating respiratory chest infections like cough, cold and asthma. Therefore, the aim of this study to identify the plants which has medicinal properties to treat respiratory diseases, modes of preparation, storage and collection habitats of individual plants, for treating respiratory disorders. They concluded a total of 51 plant species belonging to 32 families with 225 use reports, all these plants are used for respiratory disorders.

Benamar, K. et.al (2023), in their study they emphasized on medicinal and aromatic plants used in the folk medicine in Morocco by population of Ain Chkef. It documents multiples data concerning the ethno-medico-botanical traits of the most cited species. An ethno botanical survey was carried out through the interviews of 183 individuals. Correlations between plants and humans of different ages, genders, educational levels, and marital status, were investigated by multiple components analysis performed using XLSTAT software. The study documented 48 used species of medicinal plants. This work will provide researchers with an important ethno botanical database which can be exploited in the development of pharmacognosy.

The study conducted by **Prinsloo, K., Kleynhans, R. and Jansen, R. (2023)**, states that use of medicinal plants in southern Africa is still prevalent. But the decline in indigenous traditional knowledge is cause for concern as this could lead to loss of valuable indigenous cultural knowledge. This study was conducted in the diverse urban township of Tembisa. In this study 17 regularly used medicinal plants were identified through the use of structured questionnaires and indicates that indigenous traditional knowledge is still prevalent in urban setting. It concludes cultural knowledge regarding medicinal plants still exist in an urban environment, the perceived lack of knowledge among the younger generation can be viewed.

The study was conducted by **Muhmmad Shakeel Awan et.al (2023)** in the year 2018 to 2020. This ethno botanical study investigates the intricate relationship between plants and human and also aims to investigate utilization of medicinal plants and asses the conservation status of flora in the western Himalayan region of Azad Jammu and Kashmir, Pakistan. Information were collected from local farmers, herb vendor and herbalist, hakims for various usage and remedies. They identified portion of plant used for medicine, preparation method and use value. The result states 47 medicinal plant species from 25 families is used for the treatment of 25 different major and minor illnesses and condition.

The study conducted by **Arshad, F. et.al (2023)**, focuses on exploring the traditional knowledge and medicinal flora the communities residing along Eastern India-Pakistan borders. In this research Snow-ball and random sampling techniques were employed for study participants. To collect desired data participants were interviewed with open ended questionnaire. The study recorded almost 75 plant taxa, majority of them were wild and plant used as whole for the preparation of medicine over 40 ailments.

The study conducted by **Laldingliani, T.B.C. (2022)**, based on Ethno medicinal study of medicinal plants used by Mizo tribes in Champhai district of Mizoram. This manuscript encompasses information on ethno medicinal plants in Champhai district,

located in the north east region of India. This study will the quantitative report on the ethno medicinal plants used by the local tribes of this region. Information was gathered through interviews with 200 informants across 15 villages of the Champhai district. Totally, 93 plant species from 53 families and 85 genera were recorded. They also stated there is no side effect recorded of ethno medicinal plants

The study conducted by **Senkardes, I., Dogan, A., Emre, G. (2022)**, elaborates the plants used as folk medicine. The data collected through semi-structured interviews with an open-ended questionnaire. This study aims to identify the plants that are used by local inhabitants therapeutically and information regarding traditional folk medicine for humans as well as animals. The study identified 101 plant taxa of which 89 were wild and 12 were cultivated taxa. They identified 499 medicinal uses of plants. The study identified 20 medicinal plants for the first time.

The ethno medicinal study carried out by **Keshri, D.S., and Bishnupriya, M. (2022)**, during the year 2015-16 in the nearby villages of Netravali wildlife sanctuary of Goa with the aim to record traditional knowledge on the medicinal plants and to create awareness for its conservation. This study provides information about drugs for various diseases which are useful for villagers, elderly people, and folklore practitioners. The study reveals tribal communities reside in their village are rely on medicinal plants found in that area to curing certain ailments.

The study conducted by **Keshri, D.S., and Bishnupriya, M. (2022)**, in the nearby villages of Bondla wildlife Sanctuary of Goa. It states that Goa revealed therapeutic application of 15 plant species and these plants are used for common health problems like Infertility, cancer, cough, Diabetes, wounds etc. Information was collected from elderly people and local healers residing in villages. The study describes the Botanical name, local Konkani name, English name, therapeutic uses, plants' part used, and modes of preparation.

An ethno botanical study was performed by **Pandey, A.K. (2021)**, to investigate the diversity of medicinal plants growing in Atal Nagar (New Raipur) region to know the ethno-medicinal usage of plant and to preserve information about the medicinal properties of plants for the future. The study identified 103 medicinal plants belonging to 90 genera through survey, field trip, and discussion with traditional medicinal practitioners.

The study has been carried out by **Emre, G. et.al (2021)**, complies details on plants in used in folk medicine. The aim of the study was to identify the plants used for therapeutic purposes by local people and also to record the information on traditional herbal medicine. Ethno pharmacological information obtained through face-to-face interviews and field works. The study identified 93 plant taxa belonging to 43 families and record their usage in folk medicine.

The study conducted by **Belgica, T. R., Suba, M.D. and Alejandro, G.D. (2021)**, focus on medicinal flora used by local inhabitants in selected Barangay of Malinao, Albay. The study was documented 74 species of medicinal plants through field survey with local experts. They concluded that almost all the parts of plants are essential for treating various disease. The study reported a total of 40 illnesses.

This article by **Hussain, M. et.al (2020)**, states ethno botanical study was conducted to document indigenous medicinal plants and their usage from knowledgeable and elderly persons in Hazara region of Pakistan. A total of 55 medicinal plants were recorded including herbs, shrubs and trees and information regarding plants' parts such as seeds, fruits, leaves and stem used as a medicine. Several field visits and questionnaire survey were carried out to gather information from local community.

Wanjohi, B. K. et.al (2020), their study aims to investigated traditional plant knowledge and uses of medicinal wild plants among the Marakwet community in Kenya. Traditional names of plants were recorded by traditional healers and local

community members. Structured interviews with the traditional healers of the local community documented 115 indigenous medicinal plant species in 27 families were used by traditional healers in the Marakwet ethnic community of Kenya.

Jadid, N., et.al (2020) had conducted a study in Indonesia, according to them locals from there possess the great knowledge on traditional medicine and they use it for their purpose. This study aims to investigate usage of plants in traditional medicine by the people of Tegger tribe. Information were gather through structured and semi structured interview and identified 30 species belonging to 28 genera and 20 families that is used as a traditional medicine to treat 20 diseases. The identified leaves are mostly used plant's part and decoction was the dominant mode of a medicinal plants.

Hussain, W. (2018), had conducted a study based on Qualitative study of Medicinal plants used by the communities residing in Koh-e-Safaid Range, northern Pakistan-Afghan borders. It states that the residents of remote areas mostly depend on folk knowledge of medicinal plants to cure different ailments. The present study was carried out to document and analyzed traditional use regarding the medicinal plants among communities residing the Koh-e-Safaid Range northern Pakistan borders. A purposive sampling method was used for the selection of informants, information regarding the ethno medicinal use of plants was collected through semi structured interviews.

Ramzi Shawana, R. And Jaradat, N. A., (2017) conducted study on the disorder called psoriasis the survey was based on medicinal plants used by patients with psoriasis. It is a frequent skin inflammatory disorder. The patients are often seeking for allopathic medicine to treat this disorder. But the use of medicinal plants over the disorder is common. The main objective of the study is to investigate the use of medicinal plant use by patients with psoriasis in the West Bank of Palestine. The face to face interview were conducted of patients who visiting to clinics. The results states that 81 patients were used medicinal plants. They identified 33 medicinal plants leaves and fruit were most commonly used by patients.

A Case Study On Medicinal Plants – An Integral Part of Goan Rituals of Goa-India has been conducted by **Naik, L.S., Puttaiah.E.T. and Ananth Nag B. (2015)**, data was collected from primary and secondary sources, uses of Medicinal plants in rituals, Fairs, Festivals etc. periodic field trips were done to various villages, place, sacred groves, also tribal communities like Dhangars, Velips were visited and knowledgeable personals, elderly men, women, village heads pujaris belonging to different villages, ward were contacted to gather data.

According to **Sawant, A.S. And Rodrigues, B.F. (2015)**, stated that an ethno botanical study involving the collection of traditional knowledge of various Medicinal plants was conducted in the year 2012-13 from south Goa and also revealed various other parameters such as ailments, plant parts used method of preparation, method of administration and ingredients added were also collected. A total of 50 Medicinal plants species belonging to 20 families and 46 genera were collected and studied for treating 18 human ailments.

Liya Hong et.al (2015), in their study has revealed that Maonan people in China have relied on traditional knowledge of medicinal plants for curing their common health issues. Hence, this study aims to identify medicinal plants used by Maonan people to report traditional knowledge associated with medicinal plants. The data were collected in the duration of June 2012-14 from 118 knowledgeable informants and field visits were conducted. A total of 368 medicinal plants were investigated and documented with their medicinal properties over 95 human diseases.

The study conducted by **Kichu, M., et.al (2015)** based on traditional knowledge on medicinal plant and it is very important part of indigenous cultures and it is become important to record this information in written form to save it for future. The aim to conduct this study on medicinal plants and describes the importance of medicinal to the people living in the village of Nagaland. Data were gathered from traditional practitioners and elders of the village through semi-structured interviews, discussions and questionnaire. Interview also record audio of interview taken. A total 135 plant

species of 69 families and 123 genera were recorded for medicine over several diseases usage of common parts of plants they were most common administered as a paste, decoction, infusion, juice or poultice or taken orally with no preparation.

Naik, L.S., Puttaiah.E.T. and Ananth Nag B. (2014), their study presents about documentation of ethno botanical studies of plants used as folk medicines in Goa. Goa consider as the land of Ayurveda, with rich source of medicinal plants as well as aromatic plants. The tribal people of Goa possess a great knowledge based on herbal medicines. This study identified plants of North and south district of Goa. The plants used as folk medicine enumerated with their botanical names, local names, family, habitat, diseases which it cures, plant part used and formulation.

2.2. Conclusion

The studies on medicinal plants were well documented by researchers. Studies were conducted in the country as well as foreign countries. Since past years, the state of Goa, has come up with great studies on medicinal plants. Additionally, the study was conducted in the Goa University itself. The researchers or even medical practitioners is trying to approach to document traditional knowledge of a certain region. There is always scope visiting for field work to identify plants in the area. The researchers studied methods from different will help to find out and discover variations in the study by conducting study in different region. Almost 50 literatures were found of the study. Most of the village areas were covered to get an opportunity to interview with locals from the villages. It is observed that due to lack of facilities, the locals from the villages are totally depends upon traditional knowledge and they possess great knowledge to cure certain ailments.

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CHAPTER 3
CONCEPTS

3.0. Introduction

Anyone can differentiate between plants and animals. Plants gets less appreciation from humans and people are more attracted towards zoos'. Often plants' image are trapped only for food and flower. No one can expect that plants are exciting and incenting entity for humans. Diversity of plants life rages from carnivorous Nepenthes species (Pitcher plant), giant stinking Rafflessia, beautiful orchids, to the towering and old Sequota.

It is necessary to know studying plants specifically their medicinal properties have great importance. In the process of photosynthesis oxygen plays significant role in giving off oxygen as a byproduct to proceed reaction. Oxygen is also essential for human beings to function respiratory process. All food we eat that come from plants either it is staple foods, also fruits and vegetables or from livestock and also herbivorous wild animals rely on plants for their nutrition also for medical care.

Plants being an essential part of nearly all food chains because plants use energy from the sunlight and nutrients, from the soil and atmosphere, convert it into a food that may be consumed and utilized by animals. The Botanists who studied about plants that is how plants can produce food we eat and how to increase their production. They play vital role in mankind's ability to feed the world and serves food security for future scrutiny. This can be achieved through plant breeding. Botanists also talked about undesirable plant, where the plants grow unnecessarily at unwanted places. Uncultivated weeds are problematic in agriculture. They also explained about how to minimize weeds that affect agriculture and ecosystem. Also there are some plants which produce some chemicals, exposed with the chemicals can cause infection to the skin.

Thousands of Plant species are cultivated and it is used for aesthetic purposes. Additionally, plants have other uses such as plant can help prevent soil erosion, it provides shades, reduce wind, modify temperature, and abate noise. To decorate or to enhance the beauty of the home, people often cut dried flowers to put it in the frame, and display plants they grow in their home garden. People often planted bedding plants, herbaceous perennials, vines, shrubs, ornamental trees, shade trees, lawn grasses. These plants are often used in textiles, photography, language, humor, architecture and art also image plants are used.

To give charmer look, these plants also used on flags, stamps, money and on arms. In addition to this, there are some art forms made of living plants for example espalier,

ikebana, bonsai and topiary. Hence, plants become the reason for the existence of a multibillion dollar per year industry of tourism which includes traveling to forests, rain forests, tulip festivals, national parks, historic gardens, botanical gardens and arboretum. In the national cherry blossom festival, the forests fill up with colorful leaves of autumn. Plants that are put up for sale as novelties including the resurrection plant, sensitive plant and the Venus flytrap.

Majority of the population around the globe are rely on medicinal plants for their primary healthcare. Medicines that are derived from plants including Vincristine, Digitalis, Colchicine, Reserpine, Quinine, Morphine, Taxol and Aspirin. There are also herbal supplements such as Saint John's wart, feverfew, Echinacea and ginkgo. Plants play vital role in treating cancer. The therapeutics of cancer such as paclitaxel, derived from the Chinese happy tree camptothecin. To discover an anti-cancer drug from plants and other natural sources has a long history.

3.1. Ethno botany

The relatively new field of ethno botany studies the correlation between a particular community, culture and the plants native to the region. Seed plant have made impact on day-to-day human life. Plants are not only major source of food and medicine but, they impact other facets of society, range from clothing to industry. Medicinal properties of plants were acknowledging in ancient times of human cultures. In the mid-1900s, synthetic chemicals were made displace plant based remedies.

Pharmacognacy is a branch of pharmacology that focuses on medicines derived from natural sources. Due to massive change in the globalization, the human knowledge of plants and their medicinal properties will loss with the cultures that fostered them. This is where ethno botanists come in, to document and preserve such knowledge.

An ethno botanist must bring in knowledge of plant life and an understanding appreciation of diverse cultures and traditions, to learn and understand about uses of plants in a different culture. The Amazon forest is stupendous residence for the diversity of vegetation and is considered an untapped resources of medicinal plants. But now, the ecosystem as well as its indigenous cultures are threatened due to extinction.

An ethno botanist is a person who acquire a broad knowledge of plant biology, ecology and sociology. They studied plant specimens and also traditions that are concern with plants. Ethno botanist not only studied plant specimens as a biological organism in a laboratory but also viewed as an integral part of human culture. The convergence of molecular biology, anthropology and ecology make the field of ethno botany a truly multidisciplinary science.

Ethno botany is a branch of science and it defines the correlation between human societies and the plant world. Over a period of this relationship arose due to symbiotic relationship between environment and human beings. The knowledge or studies have arisen including names, uses, utilization and management of plant biodiversity. Plant biodiversity is a natural and cultural treasure. Therefore, it should be conserve, preserve and must disseminate its importance. Conservation and preservation of biodiversity serve development of new products of interest for human well-being and now it is become necessary to conserve it for indigenous knowledge about medicinal plants.

The study about ethno botany gives us knowledge of traditional uses of plants and this knowledge may useful in the development of societies. The study of ethno botany summarizes the unknown uses of medicinal plants from which we can understand the different uses of medicinal plants that are unknown to us. Plants are not only known for their medicinal properties and curing effects but also for their utilization as raw materials to make clothes. Knowledge about traditional uses of plants is fundamental to discovering new medicines and foods.

Tribal people were living in the village area are totally dependent on indigenous knowledge of plants. They possess knowledge about medicinal plants for their primary health care as well as their daily needs. Tribal people collects plant materials such as leaves, dyes, roots, gums etc. from the forests and they formulate medicines at their residence, in their difficult situation or for their daily basics needs. Even today the group of people in the northeast region of India rely on herbal products, they prepare medicine and herbal products for their basic needs. For majority of the global population, medicinal plants serve a source of medicine.

During the last few decades, some substances such as guanine, cocaine, dioxin and taxol have been discovered from plants, due to the study on ethno botany. Also bioactive

compounds such as antemisonin, gossypol, hypericin, etc. have been discovered from the plants by understanding ethno botany due to engagement of society into the plants.

It is become necessary for the people to understand the different aspects of ethno botany, as ethno botany disseminate the awareness for maintaining relationship between biodiversity and cultural diversity as well as mutual influence of plants and humans.

We often heard about the term indigenous societies also it has several other terms tribals / ethnic societies/ rural communities which referred to the people or locals from the village who mainly rely on medicinal plants for their daily purpose. These indigenous people have protected the biodiversity with which they have mutual relationship.

In ancient times, wild plants constitute as a sustainable source for most indigenous communities for subsistence. Tribal people have rich amount of information about traditional uses of medicinal plants. This knowledge has got from their ancestors. There is no record of this traditional knowledge in the books. It just passes verbally from one generation to another. Moreover, as we study deep indigenous knowledge of medicinal plants is not the one-day job to study whole indigenous knowledge as there are lot to study about it.

Majority of the locals from the village are refuse to reveal such knowledge because they do not want to disseminate information they have got from their ancestors as this knowledge is treasure for them. They want to keep it secret what they have learned valuable treasure from their ancestors.

Some people have curiosity to disseminate information to the common people, but lack of technology they are unable to share their views. Even the technologies have been improved in different areas but sometimes shyness while in front of cameras is become major barrier. Some of them think if the knowledge revealed to the public, due to modernization in the world anybody can receive it and it may lead to loss of opportunities towards local medical practitioners and that is why this knowledge remain hidden somewhere.

Nowadays, people are seeking for traditional knowledge for their health care. Hence, tribal knowledge is not only important to tribal people but also for wider world. There

is an urgent need to preserve and conserve it for future scrutiny. Even in the modernizing world and civilization indigenous knowledge are still remain prevalent.

The indigenous culture and biodiversity are like two sides of a coin, as destruction of biodiversity is also leads to loss of indigenous knowledge. Therefore, documentation of such knowledge is very important in the today's world before it is being lost forever to future generation. Research is the only way to reveal such knowledge but still it depends on how much local people will contributing and collaborating in the study.

3.2. Indigenous Knowledge

In Goa, early period, tribal communities lived in harmony with environment and they started using herbal plants available in the environment for their medicinal properties as well as they consume as a food. Thus, they developed different healthcare system which available locally for them. They started applying indigenous knowledge which has got from their environment. This indigenous knowledge is referring to as traditional healing system or traditional medicine. In rural area elderly people possess great skill about indigenous knowledge and traditional methods of curing diseases. They apply the indigenous beliefs, skills and cultural practices concerned with the health of the people is called Vaidya. They called Vaidya in their local language meaning doctor. Similarly, the ladies from the villages have the knowledge of indigenous medicines. These ladies considered women specialist in the village who are expert in doing the deliveries of pregnant ladies and after delivering a child, they know how to look after a new born babies for their nourishment and taking care in adverse times.

There are families belonging to Gawda communities who have knowledge about medicinal plants. In their community it is their part of knowledge system, these indigenous people who often possess traditional knowledge. In some villages, some peculiar type of family only there are elderly ladies called Vaijiin also called untrained nurses.

In modern era, in the state of Goa traditional knowledge is losing its significance especially today's generation because of arrival of allopathic medicine since British rulers, Portuguese in Goa. Allopathic medicine observed in getting instant relief from all pains and this became the reason, most of the people seek for these medicines. Even though they know the side effects of the medicines. Still people are consuming chemical

based medicines carelessly irrespective of their side effects. These side effects may realize by the people over a time.

All over the world traditional knowledge loss its importance due to following reasons:

- Vaij communities possess traditional knowledge and they share their knowledge only in the families or next generation. Dying such personalities leads to loss of traditional knowledge and once it is lost it cannot be retrieved.
- Their hesitation to share the knowledge related to curative properties of medicinal plants.
- Selling of medicinal plants as a manufacturer of Ayurveda products.
- Non application of medicinal herbs due to the inaccessibility of medicinal plants to the needy people may results in loss of data record of curative effects of medicinal plants.
- Ignorance and negligence towards traditional medicine due to modernity of lifestyle.
- Lack of facilities and training for maintaining and preserving traditional knowledge is given to traditional people.
- Climatic changes may affect the plant species may result in loss of traditional knowledge.

3.2.1. Conservation of Indigenous knowledge

In many parts of the world Ethno botanical studies were conducted and have found majority of the local cultures are aware about useful plant species available in their ecosystem. There are people living as subsistence lifestyle, which they gather, hunt or grow all of the food medicine, materials and other necessities to fulfill their needs. By living in a village area and taking own responsibility of health care, the people develop unique traditional knowledge system, this knowledge may be gained by performing different methods and have faced errors. This unique knowledge has been passed through oral transmission from one generation to other in their own family members. Such indigenous knowledge is valuable cultural resources and ethno botanist are hunting for medicinal plants and indigenous people that will help in curing. Unfortunately, the local traditional knowledge is lost due to sudden move towards and

modern materialistic society. Therefore, local medical practitioners should be given opportunities to conserve their own indigenous knowledge they possess.

3.3. Conclusion

The study explains the concepts of ethno botany which refers to correlation between environment and humans. The ancient people were using indigenous knowledge, got from their ancestors for maintaining health and also as a food. Hence, plants play a major role in their part of life. The ancient people were using all plants and treat severe diseases. This unique knowledge system developed within their community. This knowledge was transfer generation to generation only in their family members. Hence, their unique knowledge system called indigenous knowledge had remained in their culture and community. Indigenous knowledge should be documented for future generation. Research is the only way to document such unique knowledge system, or otherwise it will be lost due to demise of local eminent personalities.

3.4. References

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CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

4.0. Introduction

This table deals with plants collected from the study area and different sources. To elaborate more keywords of plants, below is the list of plants given in the English name, Konkani name, Botanical name, Sanskrit name of plants.

Followed by a comprehensive details of studied plants is given in table 2, includes Taxonomical Hierarchy, Konkani name, pictures of plants and its medicinal properties. In table 3 a comprehensive Taxonomical Hierarchy is given which uploaded on the Google site.

Table 1: List of Plants

SR. No.	English Name	Also known as	Konkani Name	Botanical Name	Sanskrit Name
1	Aloe vera	Aloe vera	Kate kuvar	Aloe barbadensis	Ghritakumari
2	Arjun tree	Arjuna tree	Arjun	Terminalia arjuna	Partha
3	Asiatic pennywort	Gotu kola	Brahmi	Centella asiatica	Mandookaparni
4	Ashok tree	Ashoka tree, gapis, talam	Ashok	Saraca asoca	Ashoka
5	Bastard teak	Butea gum, sacred tree, parrot tree	Palas	Butea monosperma	Palasa
6	Bedda nut tree	Belleric, Myrobalan	Bibitaki/ Ghoting	Terminalia bellirica	Bibhitaki
7	Betel pepper	Betel vine, Sireh	Panel	Piper betle	Nagavali
8	Bitterweed	King of Bitters, Creat, Green chireta, Indian Echinachea	Kirayata	Andrographis paniculata	Kalmegh
9	Black pepper	-	Miri	Piper nigrum	Maricha
10	Blackboard tree	Milkwood, Devil's tree, Scholar tree	Satan	Alstonia scholaris	Saptacchada
11	Butterfly pea	-	Gokarna	Clitoria ternatea	Aparajita
12	Carandas plum	Christ's thorn	Kanna	Cassia carandas	Karamarda
13	Castor oil plant	-	Arand	Ricinis communis	Erand
14	Chinese caste tree	Five leaved caste tree,	Lingad	Vitex negundo	Nirgundi

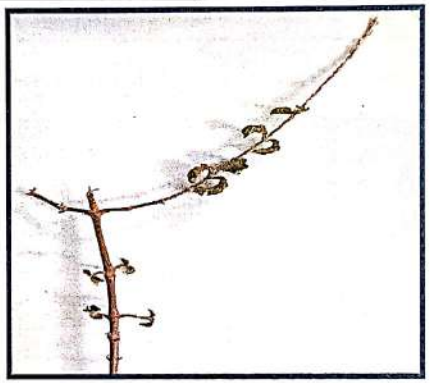
		Horseshoe vitex, Nisinda			
15	Chaff flower	Prickly chaff flower, Devil's horseship	Aghado	Achranthes aspera	Apamarga
16	Cinnamon	Dalchini	Tiki	Cinnamomum zeylanicum	Twak
17	Curry tree	Kadipatta	Karvil	Murraya keonigii	Kaidarya
18	Cuscus grass	Vetiver, Khas-khas, Khus-khus	Vala	Vetiveria zizanioides	Ushira
19	Custard apple	-	Hatyar, sitaphal	Annona squamosa	Sitaphalam
20	Drumstick tree	Moringa	Shengul	Moringa oleifera	Sigru
21	Dusky five brand bark	-	Naravala	Premna integrifolia	Agnimantha
22	False daisy	Bhringraj	Mako	Ecliptic alba	Bhringaraj
23	Giant milkweed	Crown flower	Rui	Calatropis gigentia	Arka
24	Golden shower	Indian laburnum, Pudding-pipe tree, Purging cassia	Baya	Cassia fistula	Aragwadha
25	Heart-leaved moonseed	Guduchi	Amritvel	Tinospora cardifolia	Guduchi
26	Holy basil	Tulsi	Tulas	Ocimum sanctum	Tulasi
27	Indian senna	Senna alexandrian, Bombay senna	Sonamukhi	Cassia angustifolia	Swarnapatri
28	Indian soapberry	Washnut, Chinese soapberry	Ritho	Sapindus mukorossi	Aristaka
29	Indian coral tree	-	Pangaro	Erythrina indica	Paribhadra
30	Indian Gooseberry	-	Avalo	Phyllanthus emblica	Amalaka
31	Indian snakeroot	Serpentina roots	Surpin	Rauwolfia serpentina	Sarpagandha
32	Indian black berry	Jaman, Black plum, Black plum tree, Malabar plum	Jambul	Syzgium cumini	Gulabjambu

		tree, Malabar plum			
33	Indian prickly ash	-	Tirphal	Zanthoxylum rhetsa	Tumbaru
34	Insulin plant	Spiral flag, Fiery costus	Insulin	Chamaecostus cuspidutus	Bandhukapushpa
35	Intellect tree	Black oil plum, Climbing chaff tree	Malkangani	Celastrus panniculatus	Jyotismati
36	Kokum butter tree	Wild mongosteen, Goa butter tree	Kokum	Garcinia indica	Vriksyamla
37	Lemon grass	West Indian lemon grass	Ganjan	Cymbopogan citratus	Bhutrina
38	Lemon	-	Limbu	Citrus limon	Nimbu
39	Malabar nut	-	Adulsa	Adhatoda vasica	Apamarga
40	Marking nut	-	Bibo	Semicarpus anacardium	Bhallataka
41	Marigold	-	Rosa	Tagetes minuta	Jhandu
42	Miracle leaf	Cathedral bells, Air plant, Life plant	Panfuti	Bryophyllum pinnatum	Parnabeeja
43	Night blooming jasmine	Coral jasmine, Seri gading, Tree of sorrow	Parijat	Nyctanthes arbor	Parijatha
44	Nim tree	Margosa,Indian lilac, Neem	Koduneem	Azadirachta indica	Nimba
45	Nut meg	-	Jayphal	Myristica fragrans	Jatiphala
46	Papaya	-	Popay	Carica papaya	Madhukarkati
47	Paper mulberry	-	Kharvat	Broussonetia papyrifera	Shakhotaka
48	Periwinkle	Madagascar periwinkle	Sadaphuli	Cantharanthus roseus	Sadapushpi
49	Pinwheel flower	Crepe jasmine	Anant	Tabernaemontana divaricata	Nandivrksah
50	Poison fruit	Seme strychnos, Quaker buttons	Kajro	Nux vomica	Kupeelu
51	Pepper mint	-	Pudina	Mentha piperita	Pudina
52	Rose	Indian fragrant rose	Gulab	Rosa indica	Taruni

53	Scoparia weed	Goat weed, Licorice weed	Paripath	Scoparia dulcis	Pashanabheda
54	Shame plant	Sensitive plant, Humble plant, Touch-me-not	Lajaki	Mimosa pudica	Lajjalu
55	Showy flower (Red)	China hibiscus, China rose, Shoeblack plant, Rose mallow	Dasvant	Hibiscus rosa-sinesis	Harivallabha
56	Showy flower (White)	China hibiscus, China rose, Shoeblack plant, Rose mallow	Dasvant	Hibiscus rosa-sinesis	Harivallabha
57	Sweet flag	Sway or Muskrat root	Vaikhand	Acorus calamus	Vacha
58	Thorn apple	Jimsonweed, Devil's snare, Devil's trumpet	Dotara	Datura stramonium	Umatta-virkshaha
59	Thumbai	Thumba	Tumo	Leucas aspera	Dronapushpi
60	Turmeric	Indian saffron	Halad	Curcuma longa	Haridra
61	White gourd melon	Wax gourd	Kuwalo	Benincasa hispida	Kushmanda
62	Wild mint	Field mint, Corn mint	Vattyalav	Mentha arvensis	Pudina

Table 2: A Comprehensive Details of Plants Studied.

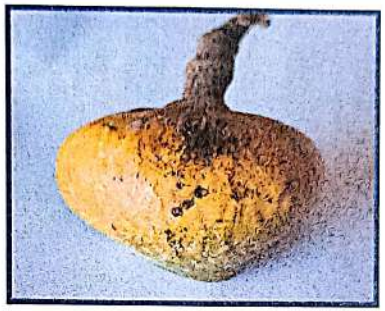
The table below indicates data collected from respondents interpreted in the table based on Taxonomical Hierarchy of plants in an alphabetical order. Besides, Konkani name of each plant, pictures and medicinal properties of each parts of plant are given below.

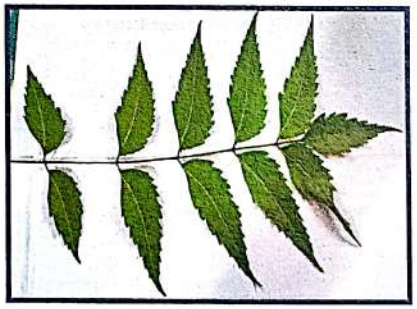
Sr. No.	Taxonomical Hierarchy	Konkani name	Pictures	Parts used and Medicinal uses
1.	**Achyranthes aspera** Kingdom: Plantae Division: Tracheophyta Class: Equisetopsida Order: Carophyllales Family: Amaranthaceae Genus: Achyranthes Species: aspera	Aghado		**Parts Used:** Leaves, Twings, Roots **Medicinal Uses:** • Twings used as toothbrush, which helpsin boosting teeth gums. • Intake of water of boiled roots gives relief from scorpion bite. • Leaves juice for clear urination. • It also beneficial in cough, Asthma, wounds. • Oil prepared from the plant gives relief from earache.
2.	**Acorus calamus** Kingdom: Plantae Division: Tracheophyta Class: Liliopsida Order: Acorales Family: Acoraceae Genus: Acorus Species: calamus	Vaikhand		**Parts Used:** Roots, Leaves **Medicinal Uses:** • Roots paste is locally apply on the knee will beneficial for knee pain. • Juice prepared from leaves of a plant given orally to the children during stomachache. • It is used during aches of legs. It is also beneficial to improve speech disorder in children.

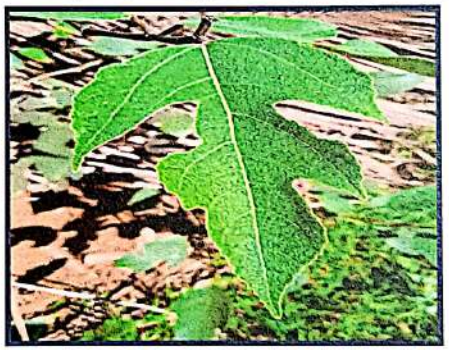
				• It gives relief during headache and running nose from cough, cold. • The plant is used to treat disease like memory loss.
3.	**Adhatoda vasica** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Lamiales Family: Acanthaceae Genus: Adhatoda Species: vasica	Adulsa		**Parts Used:** Roots, leaves, Bark, Twigs **Medicinal Uses:** • It is a bronchodilator, respiratory stimulant expectorant antiseptic, abortifacient, and antibacterial, anti-insect. • Consuming raw leaves of Adulsa, also boil it in the water and consuming it with added honey will assist in cold and cough. • Leaves and paste of roots are considered as beneficial for wounds and cold. • In case of itching to the body, having a bath of boiled leaves will give relief from rashes.

				
4.	**Aloe barbadensis** Kingdom: Plantae Division: Tracheophyta Class: Liliopsida Order: Asparagales Family: Xanthorrhoeaceae Genus: Aloe Species: barbadensis	Katekuvar		**Parts Used:** Gel **Medicinal Uses:** • Consuming aloe vera gel with honey beneficial for cold, cough, asthma, also helps in constipation and increase appetite. It also prevents throat pain and itching due to cold. It increases stamina. • It also used for skin treatment such as acne, rashes. • Aloe Vera gel apply to the scalp of the hair will promote hair growth, helps to prevent dandruff and stregthen the hair roots.

				
5.	**Alstonia scholaris** Kingdom: Plantae Division: Anthophyta Class: Dicotyledoneae Order: Gentianales Family: Apocynaceae Genus: Alstonia Species: scholaris	Satan		**Parts Used:** Bark **Medicinal Uses:** • A bark of Alstonia locally rough on the rock, make a fine paste and apply on the body during chicken pox.
				

6.	**Annona squamosa** Kingdom: Plantae Subkingdom: Tracheobionta Super division: Spermatophyta Division: Magliophyta Class: Magnoliopsida Subclass: Magnoliidae Order: Magnoliales Family: Annonaceae Genus: Annona Species: squamosa	Hatyar/ Sitaphal		**Part Used:** Leaves, Fruit **Medicinal Uses:** • Its fruit is edible. • Leaves paste applies over the hair scalpis helpful in lice prevention.
				
				

7.	**Andrographis paniculata** Kingdom: Plantae Division: Magliophyta Class: Magliopsida Order: Lamiales Family: Acanthaceae Genus: Andrographis Species: paniculata	Koduvakhat, Kirayate		**Parts Used:** Leaves, Twings **Medicinal Uses:** • The leaves are bitter in taste as it is called king of bitters. • It is beneficial during cold. Leaves are boiled in water and taken orally for better digestion and incase stomachache. • In bitterweed add bark ofMilkweed, Scabious, Guava, castor oil plant, Coral tree combination of these should boiled in water and keep whole night and taken in the morning to promote better digestion.
8.	**Azadirachta indica** Kingdom: Plantae Division: Magnoliophyta Subclass: Rosidae Order: Sapinales Family: Meliaceae Genus: Azadirachta Species: indica	Koduneem		**Parts Used:** Leaves, Bark, Roots, Twigs **Medicinal Uses:** • The leaves are bitter in taste. It's leaves paste and root juice is applied for wound healing. • Having bath from boiled Neem leaves will prevent skin infection, itching, rashes during hot season. Other skin infection like chicken pox. • Fresh twigs of Neem tree used for teeth brushing which will strengthen the gums and also prevent odor in mouth as this plant can prevent most of the dental issues.

9.	**Benincasa hispida** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Cucurbitales Family: Cucurbitaceae Genus: Benincasa Species: hispida	Kuwalo		**Parts Used:** Fruit, Seed **Medicinal Uses:** • It helps to treat Manas Rog (Mental disease, Memory loss).
10.	**Broussonetia papyrifera** Kingdom: Plantae Subkingdom: Tracheobionta Super division: Spermatophyta Division: Magnoliophyta Class: Magnoliopsida Order: Rosales Family: Crassulaceae Genus: Broussonetia Species: papyrifera	Kharvat		**Parts Used:** Fruit, Gum **Medicinal Uses:** • Fine powder prepared from dry fruits of plants given to diabetic patients.
11.	**Bryophylum pinnatum** Kingdom: Plantae Division: Spermatophyta Class: Magnoliopsida Order: Rosales Family: Crassulaceae Genus: Bryophylum Species: pinnatum	Panfuti		**Parts Used:** Leaves **Medicinal Uses:** • Leaves juice taken orally in case kidney stone.

12.	**Butea monosperma** Kingdom: Plantae Subkingdom: Tracheobionta Division: Magnoliophyta Class: Magnoliopsida Subclass: Rosidae Order: Fabales Family: Fabaceae Genus: Butea Species: monosperma	Palas	https://mybageecha.com/products/butea-monosperma-palash 	**Parts Used:** Leaves, Flower **Medicinal Uses:** • Juice prepared from leaves and flowers helps to prevent kidney stone.
13.	**Catharanthus roseus** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Gentianales Family: Apocynaceae Genus: Catharanthus Species: rosea	Sadafuli		**Parts Used:** Roots, Flower **Medicinal Uses:** • Juice of Roots taken orally incase white discharge in women. • Flowers are boiled in water, juice is potable prepared from flowers. • Juice of flowers and leaves are used for treating diabetes in patients.
				

		Sadafuli (Pink)		**Parts Used:** Flower **Medicinal Uses:** • Flowers used as vegetable, given to diabetes patients helps in maintaining diabetes.
14.	**Carica papaya** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Brassicales Family: Caricaceae Genus: Carica Species: papaya	Popay		**Parts Used:** Leaves, Fruits **Medicinal Uses:** • Intake of leaves juice helps in curing dengue. • Leaves of papaya are keep on the head of patients will help to decrease temperature.
				

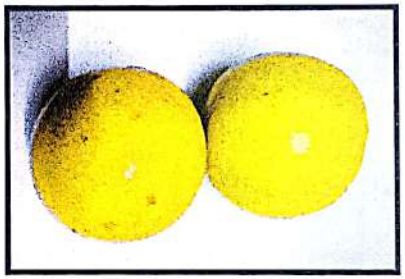
				
15.	**Cassia carandas** Kingdom: Plantae Division: Tracheophyta Subphylum: Angiospermae Class: Asterids Order: Gentianales Family: Apocynaceae Genus: Cassia Species: carandas	Kanna		**Parts Used:** Roots **Medicinal uses:** • Paste of roots can apply on wounds and infection.
16.	**Cassia angustifolia** Kingdom: Plantae Subkingdom: Tracheobionta Division: Magnoliophyta Class: Magnoliopsida Subclass: Rosidae Order: Fabales Family: Caesalpiniaceae Genus: Cassia Species: angustifolia	Sonamukhi	https://en.m.wikipedia.org/wiki/Senna_alexandrina 	**Parts Used:** Leaves **Medicinal Uses:** • Leaves juice taken orally as it is beneficial for cold.

17.	**Cassia fistula** Kingdom: Plantae Division: Magnoliopsida Class: Magnoliopsida Subclass: Rosidae Order: Fabales Family: Fabaceae Subfamily: Caesalpinioideae Genus: Cassia Species: fistula	Baya		**Parts Used:** Drumstick, Flower **Medicinal Uses:** • Juice prepared from drumstick is potable,it gives relief from headache. • It is used as vegetable by diabetes patients. Preparing vegetable from flowers helps to maintain sugar level in the body.
				
				

18	**Calatropris gigentia** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Gentianales Family: Apocynaceae Genus: Calatropris Species: gigentia	Rui		**Parts Used:** *Leaves, Gum* **Medicinal Uses:** • Keeping fresh leaves on the swallow part of skin will prevent further causes. • Its gum should mix with raw milk, drinking this mixture helps in curing asthma in patients. • Leaves paste applied over the infected area provide relief from snake bite.
				
19.	**Centella asiatica** Kingdom: Eukaryota Division: Magliophyta Class: Magliopsida Subclass: Rosidae Order: Apiales Order: Aralianae Family: Apiaceae Genus: Centella Species: asiatica	Brahmi		**Parts Used:** Whole Creeper **Medicinal Uses:** • This creeper used to treatmental diseases such as memory loss. Extract juice from whole creeper with adding water given to patients.

				
20	**Celastrus panniculatus** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Celastrales Family: Celastraceae Genus: Celastrus Species: panniculatus	Malkangni	https://www.avinaturals.com/product/malkangani-oil/ 	**Parts Used:** Seed **Medicinal Uses:** • It is an intellect promoter (brain tonic), in aches. In aches, oil prepared from seeds is locally apply over the skin.
21.	**Chamaecostus cuspidatus** Kingdom: Plantae Division: Tracheophyta Class: Equisetopsida Subclass: Magnoliidae Order: Zingiberales Family: Costaceae Genus: Chamaecostus Species: cuspidatus	Insulin		**Parts Used:** Leaves **Medicinal Uses:** • The leaves are chewed twice daily or taken dry leaf powder with adding water twice daily. • The leaves of insulin plant help in generating insulin thereby treating diabetes. • The plant is known to be effective against swelling infection.

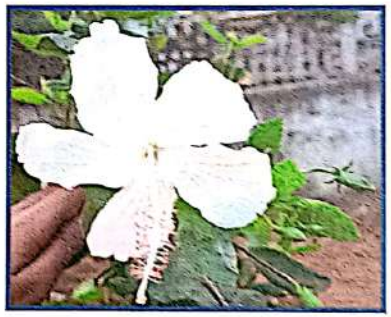
				
22.	**Cinnamomum zeylanicum** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Laurales Family: Lauraceae Genus: Cinnamomum Species: zeylanicum	Tiki		**Parts Used:** Bark, Leaves **Medicinal Uses:** • Cinnamon constitute Indian spice. • A mixture isprepare from leaves and bark with adding ragi powder and applies during bone break pain.
				

23.	**Citrus limon** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Sapindales Family: Rutaceae Genus: Citrus Species: limon	Limbu		**Part Used:** Fruit **Medicinal Uses:** • Lemon juice helpful in stomachache and better digestion. • Lemon peel locally apply on the head for dandruff prevention.
				
24.	**Clitoria ternatea** Kingdom: Plantae Subkingdom: Tracheobionta Subdivision: Spermatophyta Division: Magnoliophyta Class: Magnoliopsida Subclass: Rosidae Order: Fabales Family: Fabaceae Genus: Clitoria Species: ternatea	Gokarna		**Part Used:** Drumstick **Medicinal Uses:** • Its drumstick used as vegetable. • Making vegetable from Gokarna drumstick beneficial in diabetes.

				
25.	**Curcuma longa** Kingdom: Plantae Division: Tracheophyta Class: Liliopsida Order: Zingiberales Family: Zingiberaceae Genus: Curcuma Species: longa	Halad		**Parts Use:** Leaves, Roots **Medicinal Uses:** • Usually leaves of plant are used for the cuisine to enhance the taste of the food. • Roots called Halad is act as antiseptic component for wounds.
26.	**Cymbopogan citratus** Kingdom: Plantae Division: Tracheophyta Class: Liliopsida Order: Poales Family: Poaceae Genus: Cymbopogan Species: citratus	Ganjan		**Parts Use:** Leaves **Medicinal Uses:** • Tea prepared from Lemon grass is beneficial for cold, cough. • Leaves of Lemon grass boiled in water for takingbath in case cold.

27.	**Datura stramonium** Kingdom: Plantae Division: Magnoliophyta Class: Magnoliopsida Order: Solanales Family: Solanaceae Genus: Datura Species: sramonium	Dotara	https://en.wikipedia.org/wiki/Datura_stramonium 	**Parts Used:** Leaves **Medicinal Uses:** • A mixture prepare from leaves of Datura, Tamarind, Moringa, vitex, Malabar nut and Night bloomimg jasmine with adding Erandel oil and salt, fenugreek seeds, Lemon. This mixture will give relief from joint pain.
28.	**Eclipta prostrata** Kingdom: Plantae Subkingdom: Tracheobionta Super division: Spermatophyta Division: Magnoliophyta Class: Magnoliopsida Subclass: Asteridae Order: Asterales Family: Asteraceae Genus: Eclipta Species:prostrata	Mako		**Parts Used:** Leaves **Medicinal Uses:** • Its dry leaves powder taken with adding water helps in healing wounds and maintaining liver. • It promotes better digestion and beneficial for eyes.

29.	**Erythrina indica** Kingdom: Plantae Division: Tracheophyta Class: Equisetopsida Order: Fabales Family: Fabaceae Genus: Erythrina Species: indica	Pangaro	https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:494596-1 	**Parts Used:** Leaf, Bark, Flower **Medicinal Uses:** • In case worm infestation leaf paste with adding coconut milk should be taken orally. • Piece of bark add ginger, garlic given to the children in case worm infestation.
30.	**Garcinia indica** Kingdom: Plantae Division: Tracheophyta Class: Equisetipsida Order: Malpighiales Family: Clusiaceae Genus: Garcinia Species: indica	Bhirand		**Parts Used:** Fruit **Medicinal Uses:** • Typically, the fruit and leaves are sour in taste. • The leaves are locally edible. • Kokum juice is potable for better digestion.
				

				
31.	**Hibiscus rosa** Kingdom: Plantae Division: Anthophyta Subdivision: Angiospermae Class: Magnoliopsida Order: Malvales Family: Malvaceae Genus: Hibiscus Species: rosa	Dasvant		**Parts Used:** Roots **Medicinal Uses:** • Juice prepared form roots taken incase white discharge in women.
				

				
32.	**Hibiscus rosa** Kingdom: Plantae Division: Anthophyta Subdivision: Angiospermae Class: Magnoliopsida Order: Malvales Family: Malvaceae Genus: Hibiscus Species: rosa	Dasvant		**Parts Used:** Flower **Medicinal Uses:** • It is a flowering plant has culinary cosmetic and medicinal uses. • Its flowers are used for preparing oil which promote hair growth.
33.	**Leucas aspera** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Lamiales Family: Lamiaceae Genus: Leucas Species: aspera	Tumo		**Parts Used:** Leaves **Medicinal Uses:** • Paste prepared from leaves. It gives relief from skin infection such as rashes, itching.

34.	**Mentha arvensis** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Lamiales Family: Lamiaceae Genus: Mentha Species: arvensis	Pudina		**Part Used:** Leaves **Medicinal Uses:** • Its leaves are added in the cuisine due to its medicinal properties • Its leaves juice with adding lemon juice, help in gas prevention in stomach.
35.	**Mentha piperita** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Lamiales Family: Lamiaceae Genus: Mentha Species: arvensis	Vattyalav		**Parts Used:** Leaves **Medicinal Uses:** • Leaves are dried on the low flame and extract juice from leaves. • Juice can be drinkable with adding honey which beneficial incold, cough and asthma.
36.	**Mimosa pudica** Kingdom: Plantae Division: Anthophyta Class: Dicotyledon Order: Fabales Family: Fabaceae Genus: Mimosa Species: pudica	Lajaki		**Parts Used:** Root, Leaves **Medicinal Uses:** • Tea prepared from roots and Leaf juice given to the patients in case of piles problems. • Grinded leaves apply on wounds, cuts to stop bleeding. • Roots are boil in a glass of water and taken orally in case of stomachache during menstrual cycle in women.

37.	**Moringa oleifera** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Brassicales Family: Moringaceae Genus: Moringa Species: oleifera	Shengul		**Parts Used:** Drumstick, Flowers, Leaves **Medicinal Uses:** • Almost it's all three parts used as vegetable, helps to increase appetite, remove whiteheads and helps to gain weight, worm infestation. It purifies blood and promote skin glow. • Preparing vegetable from flower will help to cure knee pain.
				
				

38.	**Murraya keonigii** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Sapindales Family: Rutaceae Genus: Murraya Species: keonigii	Karvil		**Parts Used:** Leaves **Medicinal Uses:** • These plant provides aesthetic flavor to the food especially in curries. The plant act as an herb. • The leaves are locally chewed will help in gas prevention in stomach, give relief from knee pain and also maintain sugar level in the body. It also helps to strengthenthe bones. • Leaves are boil in oil. Similarly, Juice prepared from leaves is added in oil and apply to hair scalp will silkenthe hair.
				
39.	**Myristica fragrans** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Magnoliales Family: Myristicaceae Genus: Myristica Species: fragrans	Jayphal		**Parts Used:** Seeds **Medicinal Uses:** • Its seeds are locally rough on the rock, make a juice and smear on swallowed part of the body.

				• Taking steam from Myristica seeds, Black pepper, Coriander, garlic will give relief from cold.
40.	**Nux vomica** Kingdom: Plantae Division: Magnoliophyta Class: Magnoliopsida Subclass: Asteridae Order: Gentianales Family: Loganiaceae Genus: Nux Species: vomica	Kajro		**Parts Used:** Roots **Medicinal Uses:** • Roots are locally rough on the rock and its juice given to infants in case of worm infestation. • Paste/ juice prepare from leaves is apply on the whole body to prevent any infection from worms.
				

				
41.	**Nyctanthes arbor** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Lamiales Family: Oleaceae Genus: Nyctanthes Species: arbor	Parijat		**Parts Used:** Leaves, Flowers **Medicinal Uses:** • Leaves are boil in water for making juice and taken in case cold and cough. • Flowers are used as vegetable.
				

42.	**Ocimum sanctum** Kingdom: Plantae Division: Magnoliophyta Class: Magnoliopsida Order: Lamiales Family: Lamiaceae Genus: Ocimum Species: sanctum	Tulas		**Parts Used:** Leaves, Seeds, Flower **Medicinal Uses:** • Its leaves locally rough on the children tongue for cleaning. • The juice prepared from leaves, flower and seeds beneficial in cold, cough.
				
43.	**Phyllanthus emblica** Kingdom: Plantae Division: Tracheophyta Class: Equisetopsida Subclass: Magnoliidae Order: Malpighiales Family: Phyllanthaceae Genus: Phyllanthus Species: emblica	Avalo		**Part Used:** Fruit **Medicinal Uses:** • Fruit is edible helps in digestion. Consuming fruit everyday will promote better growth of the hair. • It also prevents skin infection.

				
44.	**Piper nigrum** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Piperales Family: Piperaceae Genus: Piper Species: nigrum	Miri, Miria, Mirvel		**Parts Used:** Seeds **Medicinal Uses:** • Dried seeds used as a traditional spice as a black pepper. Its seeds are added in water along with other spice seeds for making juice. Its juice gives relief from cold.
				

45.	**Piper betle** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Piperales Family: Piperaceae Genus: Piper Species: nigrum	Panel		**Part Used:** Leaves **Medicinal Uses:** • Leaves are locally chewed after having food to improve digestion.
46.	**Premna integrifolia** Kingdom: Plantae Division: Tracheophyta Order: Lamiales Family: Lamiaceae Genus: Premna Species: integrifolia	Naravala		**Parts Used:** Leaves **Medicinal Uses:** • Leaves are bind on legs incase chicken pox and menstrual cycle to prevent other infections. • In case of stomachache during menstrual cycle leaves juice is taken orally. • Leaves paste is apply for healing wound and curing infection.
47.	**Rauwolfia serpentina** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Gentianales Family: Apocynaceae Genus: Rauwolfia Species: serpentina	Surpin		**Parts Used:** Leaves **Medicinal Uses:** • Leaves juice taken orally in constipation problem in children.

				
				
48.	**Ricinis communis** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Malpighiales Family: Euphorbiaceae Genus: Ricinis Species: communis	Arand		**Parts Used:**Fruit **Medicinal Uses:** • Oil prepare fromfruit apply during body pain.

				
49.	**Rosa indica** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Rosales Family: Rosaceae Genus: Rosa Species: indica	Gulab		**Parts Used:** Flower **Medicinal Uses:** • Petals of flower are kept in a cold water for a night. In the morning splash that water on the face.
				

50.	**Saraca asoca** Kingdom: Plantae Division: Tracheophyta Class: Equisetopsida Order: Fabales Family: Fabaceae Genus: Saraca Species: asoca	Ashok		**Parts Use:** Leaves **Medicinal Uses:** • Leaves are boil in water taken orally in diabetic condition. It maintains sugar level in the body.
				
51.	**Sapindus mukorossi** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Sapindales Family: Sapindaceae Genus: Sapindus Species: mukorossi	Ritho		**Part Used:** Fruit **Medicinal Uses:** • In case of stomachache seeds of Indian soapberry rough locally on palm and apply gently on stomach. • A mixture prepare from Indian soapberry and grass smeared on stomach in case worm infestation in children.

				
				
52.	**Scoparia dulcis** Kingdom: Plantae Division: Magnoliophyta Class: Magnoliopsida Order: Scrophulariales Family: Scrophulariaceae Genus: Scoparia Species: dulcis	Paripath		**Parts Used:** Leaves **Medicinal Uses:** • Leaves are boil in water. Leaves juice is potable during cold and chicken pox.

53.	**Semecarpus anacardium** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Sapindus Family: Anacardiaceae Genus: Semecarpus Species: anacardium	Bibo	https://medium.com/@arunjharwal/bhilawa-bhallataka-semecarpus-anacardium-benefits-uses-ad5801a791b2 	**Parts Use:** Seeds **Medicinal Uses:** • Seeds are locally rough on the rock, extracted seed juice with adding watershould be warm and apply on rough feet. • Its slightly hot juice prepare from seeds applies over the hair scalp, helps to prevent dandruff.
54.	**Syzygium cumini** Kingdom: Plantae Division: Magnoliophyta Class: Magnoliopsida Subclass: Rosidae Order: Myrtales Family: Myrtaceae Genus: Syzygium Species: cumini	Jambul		**Parts Used:** Fruits, Seeds, Bark **Medicinal Uses:** • A paste of bark is preparedand applies on the body in case skin infection and also beneficial in bone ache. • Its dried seeds powder with adding water given orally to diabetic patients. • Aids in digestion and cures several gastrointestinal problems like constipation, bowel disorders. • It is also a well-functioning immunity booster as it helps prevent several respiratory infections like common cough, cold and other contagious infections.

				
				
55.	**Tabernaemontana divaricata** Kingdom: Plantae Division: Anthophyta Class: Dicotyledoneae Order: Gentiales Family: Apocynaceae Genus: Tabernaemontana Species: divaricata	Anant		**Parts Used:** Leaves **Medicinal Uses:** • Leaves paste should apply on infected area.

				
				
56.	**Tagetes minuta** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Asterales Family: Asteraceae Genus: Tagetes Species: minuta	Rosa		**Parts Use:** Leaves **Medicinal Uses:** • Juice prepare from leaves, putting few drops in the ear gives relief from ear ache.
				

57.	**Terminalia arjuna** Kingdom: Plantae Division: Magnoliophyta Class: Magnoliopsida Order: Myrtales Family: Combretaceae Genus: Terminalia Species: arjuna	Arjun		**Parts Used:**Bark **Medicinal Uses:** • Tea prepare fromits bark given to patients in case pressure problems.
				

58.	**Terminalia bellirica** Kingdom: Plantae Subkingdom: Tracheobionta Super division: Spermatophyta Division: Magnoliophyta Class: Magnoliopsida Subclass: Rosidae Order: Myrtales Family: Combretaceae Genus: Terminalia Species: bellirica	Bibitaki		**Parts Used:** *Fruits* **Medicinal Uses:** • Dry powder of fruits is fry with adding oil and gently massage on hair scalp in case hair fall. • Bibitaki fruit is dried, powdered, slightly heat and add oil in it and gently massage into hair scalp will help in treating various scalp and hair infections, lice itching, folliculitis and dandruff.
59.	**Tinospora cardifolia** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Ranuculales Family: Menispermaceae Genus: Tinospora Species: cordifolia	Amritvel		Parts Use: Whole Creeper Medicinal Uses: • Juice prepare from its creeper taken orally in case janndice. Its juice with added honey taken in the morning. • In chronic fever stem decoction can be given. • It is helpful in all types of diabetes and during pain in eyes. • It's leaves juice given to patients in body pain and also it promotes better urination • Leaves use as vegetable.

60.	**Vetiveria zizanioides** Kingdom: Plantae Division: Tracheophyta Class: Liliopsida Order: Poales Family: Poaceae Genus: Vetiveria Species: zizanioides	Vala		**Parts Used:** Roots **Medicinal Uses:** • Juice of roots taken orally to maintain body temperature. • Leaves are boil in water to drink in summer season will maintain body temperature.
				
61.	**Vitex negundo** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Lamiales Family: Lamiaceae Genus: Vitex Species: negundo	Lingad		**Parts Used:** Leaf, Seed, Root **Medicinal Uses:** • Beneficial in worm infestation, headache, traumatic injury, fever, skin disease. • Leaf paste applied in any painful inflammatory conditions. • Its seed paste increases menstrual flow. • In the case of skin disease, oil prepared from leaves and roots is beneficial. Leaves are boiled in water to take bath in case body pain.

				• Take steam by putting leaves into the water in case cold. • Juice extract from leaves given to cancer patients. • Burning of dry leaves can prevent mosquito. • Beneficial for eyes infection.
62.	**Zanthoxylum rhetsa** Kingdom: Plantae Division: Tracheophyta Class: Magnoliopsida Order: Sapindales Family: Rutaceae Genus: Zanthoxylum Species: rhetsa	Tirphal		**Parts Used:** Fruit **Medicinal Uses:** • In headache and toothache, its fruit paste applies locally. • It is helpful in oral, dental, throat disease. Its decoction uses for gargling. • In Dental problems fruit can be chewed. • In worm infection fruit churna given orally to patients.

Table 3: Taxonomical Hierarchy

A comprehensive Taxonomical Hierarchy of studied medicinal plants is given below. This data was uploaded on Google sites through Awesome table to make it publicly available.

Sr. No.	Botanical Name	Kingdom	Subkingdom	Super division	Division	Subdivision	Class	Subclass	Order	Family	Subfamily	Genus	Species
1	Achyranthes aspera	Plantae			Tracheophyta		Equisetopsida		Caryphyllales	Amaranthaceae		Achyranthes	aspera
2	Acorus calamus	Plantae			Tracheophyta		Liliopsida		Acorales	Acoraceae		Acorus	calamus
3	Adhatoda vasica	Plantae			Tracheophyta		Magnoliopsida		Lamiales	Acanthaceae		Adhatoda	vasica
4	Aloe barbadendis	Plantae			Tracheophyta		Liliopsida		Asparagales	Xanthorrhoeaceae		Aloe	barbadendis
5	Alstonia scholaris	Plantae			Anthophyta		Dicotyledoneae		Gentianales	Apocynaceae		Alstonia	scholaris
6	Annona squamosa	Plantae	Tracheobionta	Spermatophyta	Magnoliophyta		Magnoliopsida	Magnoliidae	Magnoliales	Annonaceae		Annona	squamosa
7	Andrographis paniculata	Plantae			Magnoliophyta		Magnoliopsida		Lamiales	Acanthaceae		Andrographis	paniculata
8	Azadirachta indica	Plantae			Magnoliophyta		Magnoliopsida	Rosidae	Sapindales	Meliaceae		Azadirachta	indica
9	Benincasa hispida	Plantae			Tracheophyta		Magnoliopsida		Cucurbitales	Cucurbitaceae		Benincasa	hispida
10	Broussonetia papyrifera	Plantae	Tracheobionta	Spermatophyta	Magnoliophyta		Magnoliopsida	Hamamelididae	Urticales	Moraceae		Broussonetia	papyrifera
11	Bryophyllum pinnatum	Plantae			Spermatophyta		Magnoliopsida		Rosales	Crassulaceae		Bryophyllum	pinnatum
12	Butea monosperma	Plantae	Tracheobionta		Magnoliophyta		Magnoliopsida	Rosidae	Fabales	Fabaceae		Butea	monosperma
13	Cantharanthus roseus	Plantae			Tracheophyta		Magnoliopsida		Gentianales	Apocynaceae		Cantharanthus	roseus
14	Carica papaya	Plantae			Tracheophyta		Magnoliopsida		Brassicales	Caricaceae		Carica	papaya
15	Cassia carandas	Plantae			Tracheophyta	Angiospermae	Asterids		Gentianales	Apocynaceae		Cassia	carandas
16	Cassia angustifolia	Plantae	Tracheobionta		Magnoliophyta		Magnoliopsida	Rosidae	Fabales	Caesalpiniaceae		Cassia	angustifolia
17	Cassia fistula	Plantae			Magnoliophyta		Magnoliopsida	Rosidae	Fabales	Fabaceae	Caesalpinioideae	Cassia	fistula
18	Calatropis gigentia	Plantae			Tracheophyta		Magnoliopsida		Gentianales	Apocynaceae		Calatropis	gigentia
19	Centella asiatica	Plantae			Magnoliophyta		Magnoliopsida	Rosidae	Apiales	Apiaceae		Centella	asiatica
20	Celastrus panniculatus	Plantae			Tracheophyta		Magnoliopsida		Celastrales	Celastraceae		Celatrus	panniculatus
21	Chamaecostus cuspidutus	Plantae			Tracheophyta		Equisetopsida	Magnoliidae	Zingiberales	Costaceae		Chamaecostus	cuspidatus
22	Cinnamomum zeylanicum	Plantae			Tracheophyta		Magnoliopsida		Laurales	Lauraceae		Cinnamomum	zeylanicum
23	Citrus limon	Plantae			Tracheophyta		Magnoliopsida		Sapindales	Rutaceae		Citrus	limon
24	Clitoria ternatea	Plantae	Tracheobionta		Magnoliophyta	Spermatophyta	Magnoliopsida	Rosidae	Fabales	Fabaceae		Clitoria	ternatea
25	Curcuma longa	Plantae			Tracheophyta		Liliopsida		Zingiberales	Zingiberaceae		Curcuma	longa
26	Cymbopogan citratus	Plantae			Tracheophyta		Liliopsida		Poales	Poaceae		Cymbopogan	citratus
27	Datura stramonium	Plantae			Magnoliophyta		Magnoliopsida		Solanales	Solanaceae		Datura	stramonium
28	Eclipta prostrata	Plantae	Tracheobionta	Spermatophyta	Magnoliophyta		Magnoliopsida	Asteridae	Asterales	Asteraceae		Eclipta	prostrata
29	Erythrina indica	Plantae			Tracheophyta		Equisetopsida		Fabales	Fabaceae		Erithrina	indica
30	Garcinia indica	Plantae			Tracheophyta		Equisetopsida		Malpighiales	Clusiaceae		Garcinia	indica
31	Hibiscus rosa-sinesis	Plantae			Anthophyta	Angiospermae	Magnoliopsida		Malvales	Malvaceae		Hibiscus	rosa
32	Hibiscus rosa-sinesis	Plantae			Anthophyta	Angiospermae	Magnoliopsida		Malvales	Malvaceae		Hibiscus	rosa
33	Leucas aspera	Plantae			Tracheophyta		Magnoliopsida		Lamiales	Lamiaceae		Leucas	aspera
34	Mentha arvensis	Plantae			Tracheophyta		Magnoliopsida		Lamiales	Lamiaceae		Mentha	arvensis
35	Mentha piperita	Plantae			Tracheophyta		Magnoliopsida		Lamiales	Lamiaceae		Mentha	piperita

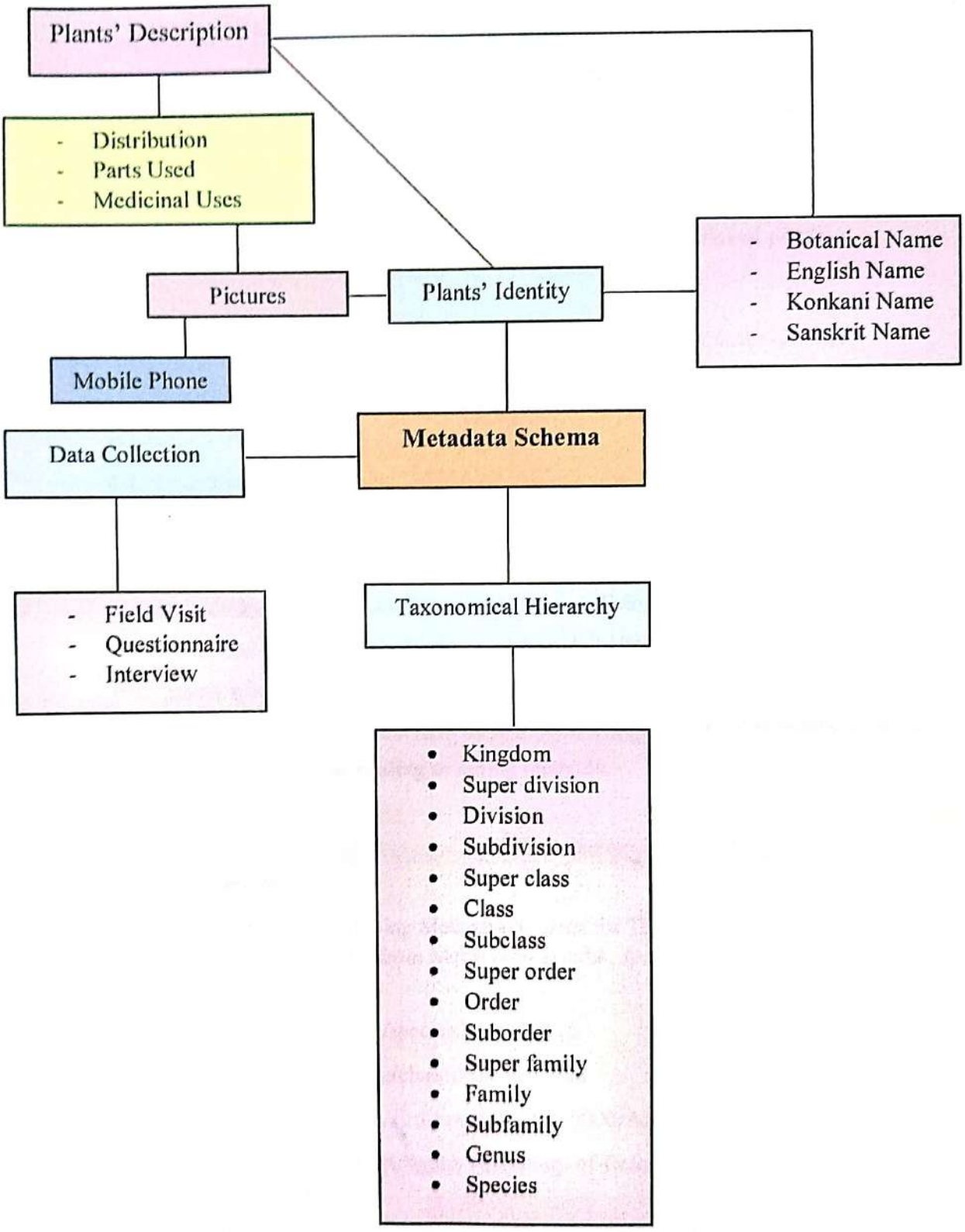


Figure 1: Metadata Schema for the Medicinal Plants under Study

A Metadata Schema was created to give framework of the study. The collected information from sources were interpreted using tables, pictures. The English name, Konkani name, Botanical name and Sanskrit name of a plant were given. Further, the plants' Taxonomical Hierarchy along with medicinal properties of each plant were tabulated. Taxonomical Hierarchy of plants were put in the Google sheet and make publicly available through Google site.

Below is the link to access list of medicinal plants collected from the sources during field visits. This link detailed with brief information about medicinal plants.

https://databasedevelopmentformedicinalplantsofsattaritaluka.wordpress.com/

4.1. Conclusion

The chapter elaborates about collected medicinal plants from the sources. A total of 62 medicinal plants and its usage were identified. The locals from the study area have possess great knowledge on curing properties of medicinal plants. Locals from this area are still depend on medicinal plants to maintain daily health routine. This area covered with plants where traditional medical practitioners are residing with their traditional knowledge system. In some villages traditional knowledge is still considered prelavant because it pertain unique healing or curing methods.

4.2. References

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CHAPTER 5
RECOMMENDATIONS AND SUGGESTIONS

5.0. Introduction

This chapter deals with the recommendations and suggestions which clarify the details of the study. It shows the efficiency of a project, work, and study to carry further tasks in the future. It adds improvements in the study and give importance of a study which may increase effectiveness of the study that may helpful in the future.

5.1. Recommendations and Suggestions

- To preserve traditional knowledge, booklets and documentary can be made, later it can be available through Social media platforms to access for the people, students and researchers.
- The documentary can be created to give opportunities to local medical practitioners to preserve unique indigenous knowledge.
- Documentary on ethno botany can reveal personality of indigenous people which can help people, seeking for local medical practitioners.
- By referring indigenous knowledge, new medicine ingredients can be find out.
- The database and framework created for the study can be made more extensive.
- In Goa has variations in Konkani language that might be sort out. Not only in Goa but the entire regions of a country variations of language can be sort out.
- A study of the different variations of the plants' names in Konkani language can be conducted.
- A study of the different variations of preparation of medicines, materials and methods in various parts of Goa can be conducted.
- A database of such variations can also be created to the researchers and users of plants for domestic and commercial purpose.
- The ontology can be created for information retrieval about medicinal plants.
- A detailed study on Goan indigenous knowledge system related to medicinal plants can be made.
- The study can be uploaded on DSpace website to access the entire document for researchers.
- A study on poisonous plants and its negative effects can be conducted.
- The research on ethno botany can provide awareness to younger generation.
- A nursery of medicinal plants can be generate which will help plant users.

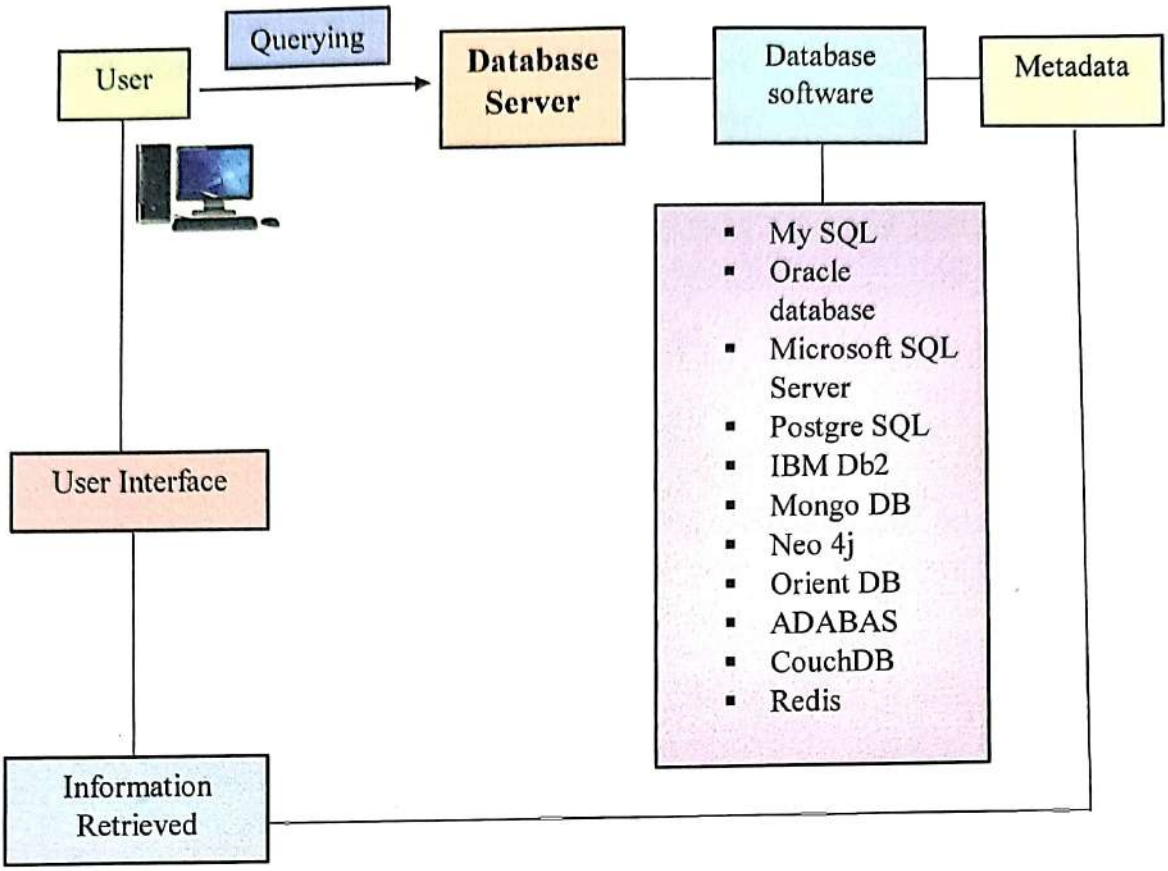

Figure 2: Database Server for the Tools used under Study

Below is the link given to access database created using Awesome Table and Google site to make it publicly available for the students and researchers. To develop a metadata, database soft wares can be used given in above figure. A database can be created using soft wares such as My SQL, Oracle database, Postgre SQL etc. needed for user interspace. Using this metadata the users can retrieve information by asking their queries.

https://sites.google.com/view/databasedevelopmentformedicina/home

CHAPTER 6
CONCLUSION

6.0. Conclusion

The study highlights the use of medicinal plants used by the local medical practitioners and medical practitioners. The plants that were documented has importance for further studies to get new scientific interpretation and new health applications. The valuable source of information available with local healers and it can be helpful clinically. The data recorded will be helpful in conservation and protection of biodiversity. Therefore, it is necessary to document indigenous knowledge.

Locals of Sattari area have ample of indigenous knowledge on medicinal plants. This area has its unique methods of treating ailments. Sattari area is covered with aesthetic flora, of which locals are making use of plants to maintain their health care. It is observed that in some of the villages of Sattari Taluka, traditional knowledge is still considered prevalent due to lack of healthcare facilities in the villages.

Similarly, medical practitioners have eminent knowledge about medicinal plants. Still, they are experimenting new methods of medicine and introducing it in the knowledge system. Almost all the medicinal plants are being used for the treatment of ailments by medical practitioners. Furthermore, all plant's part are used for the treatment of human ailments in their all formulations but it differs according to condition of patients. There are no such concepts that the medicine is specialize for specific age groups. But the only thing is that, the dosage will vary in child and adults. In children the less amount of dosage is recommend and in adults the more amount of dosage is given. The patients have to take medicine in a given quantity if not there can be certain side effects observed in patients. Heavy dosage or intake of medicine in inappropriate timing will be harm or may not be harm the body.

In the modernizing world in foreign countries indigenous knowledge is still considered prevalent. There are some culture and communities from the country and the foreign countries are performing indigenous knowledge. These communities possess unique knowledge which may be useful for them in case lack of medical healthcare facilities. The studies were conducted exploring medicinal plants and its medicinal properties which can help people to get in touch with indigenous knowledge system.

The present study were not able to cover medicinal plants from whole Sattari area due to time constraints. Only few medicinal plants along with their medicinal properties used by traditional healers were documented in the study. Additionally, a database of

collected medicinal plants was developed using Awesome Table and Google site to make it publicly available for the students and researchers.

The study will help to conserve the valuable knowledge of Medicinal plants, or else will be lost, due to modernization and sudden move towards chemical based medicines. Medicinal plants widely known for their curative effects on certain diseases as it has no side effects. The study also determines botanical character of medicinal plants, general character, properties, composition and uses of its parts which are employed in medicine.

Besides, this documented indigenous knowledge of local healers helps in promoting valuable source of knowledge and also to sustain importance of plant species and indigenous knowledge bring into contact with students, researchers as well as youth of the generation. This study stress upon natural ecosystem which assist to grip cultural values among people. The study will be helpful to demonstrate the medicinal plant species and indigenous knowledge to future generation. The plants were documented in the study to promote current development of medical clarification and biological application.

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APPENDIX

Questionnaire

1. Name the medicinal plants which are frequently being used by you for treating ailments? (Konkani name, Scientific name, local name)

2. In which part of Goa is these plants found?

3. Where do you collect plant species for preparing medicine?
   a) Wild
   b) Cultivated
4. Could you please furnish with classification system of specific plant?

5. Which part of the plants is being used for treating of ailments?

6. How are they used?
   a) Dry
   b) Wet

7. How would you prepare medicine?
   a) Using single plant
   b) Combination of two or more plants

8. Please, would you explain the method of preparation of medicine?

9. Do you add any other component while preparing medicine? If yes,

10. Which are the components do you add in the medicine?

11. In which form the medicine gives to the patients?
    a) Juice

b) Solid preparation

c) Powder

d) Soft Paste

e) Crushed

f) Decoction

g) Other

12. What is the dose quantity of medicine should give to the patients?

13. Do you recommend these medicines for specific age groups? How?

a) Yes

b) No

14. If yes, how do you used?

15. Do you suggest any precautions to your patients?

16. Which are the common health problems you treat?

17. Have you ever treated severe disease?

a) Yes

b) No

18. If yes name them.

19. How much time do you need to spend for preparing medicine?

20. What are the formulations can be prepared from medicinal plants?

21. Have you ever observed any side effects of medicine you prepared?

a) Yes

b) No

22. If, yes what is the remedy?