CHAPTER

1

INTRODUCTION

Plants with their huge diversity and wide distribution on our planet have been the major source of basic needs like food and shelter for mankind. Plants and plant resources play an important role in human survival. Not limiting its role to just being a primary reason for the existence of aerobic organisms, Plants have been a key renewable resource. From ancient times, plant resources are explored for various purposes - food, shelter, textiles, medicines, and industrial applications (Bhargava, 1983).

As humans migrated and foraged over a large land area, diverse kinds of ethnic groups started taking shape. Different ethnic groups follow distinct food, dress, rituals, language, and traditions. With these variations, each human race established diverse usage and knowledge of the plants around them. Such a piece of knowledge exists in a variety of forms, including paintings, writings, sculptures, and oral tradition. Round the globe, plants and plant products are practiced for one or the other aspects of human life (Namsa et al., 2011). The information of applying the knowledge is preserved with many ethnic groups. These ethnic groups hold enormous information about plants and their application.

Traditionally, knowledge of plants and their utility is passed from generation to generation. This ethnical expertise of plants, their names, ecology, their use, and conservation are widely known as Ethnobotany. Ethnobotany is the branch that deals at the junction of Botany and Anthropology, wherein it provides a scientific way of documentation, preservation, and validation of traditional knowledge (Bhatia et al., 2014; Iwu, 2002; Kala, 2005). In recent times, subject inclusions are expanded and are now a multidisciplinary science. Ethnobotany covers several fields like ethnotaxonomy, ethnoecology, ethnoforestry, ethnocosmetics, ethnoagriculture, ethnomedicine, ethnopharmacology, ethnogynaecology, and

ethnopediatrics, etc (Suthari et al., 2021). As noted, ethnobotany lacks a unifying theory due to the diversity of cultures and languages, and theory-inspired and hypothesis-driven research in the field is demanded (Gaoue et al., 2017).

The quest for a cure for illness dates to the work of Ayurveda, Pharmacopoeia, Materia medica, and Doctrine of signatures (Gossell-Williams et al., 2006). Plants and their products are described in all the scholarly works of ancient times, which has helped in the invention of modern-day medicines (Okogun, 2002). Plants with their uses detailed in specific diseases as a cure are referred to as medicinal plants. Medicinal and aromatic plants (MAPs) entering into the pharmaceutical market and herbal industries are often found linked to the cultural and traditional knowledge of the people (Bhattarai & Karki, 2004). Medicinal plants are widely used for the treatment of ailments and prevention of diseases and offer nutritional value, then called herbal food or traditional medicinal food. In the present scenario as per World Health Organization (WHO) data, worldwide 40% of pharmaceutical drugs have their origin from natural products and 88% of countries are estimated to use traditional medicines. With the objectives of evidence & learning, data and analytics of traditional medicines, and its contribution to global health, WHO has established a Global Centre of Traditional Medicine (GCTM), with the support of the Government of India (World Health Organization (WHO), 2023). The use of traditional, complementary, and alternative medicines is the best example of medical pluralism, wherein multiple therapeutic systems thrive.

Women's physical and emotional well-being is a priority section for Health Organizations in countries. Malnutrition and lack of maternal health & hygiene are among the key problems faced by women in India (National Health Portal, 2023). Maternal mortality reported by India is approximately one-fifth worldwide, according to socio-economic and cultural constraints to medical care. According to National Family Health Survey reports, even with better stats on institutional births, increased malnutrition and mortality in children and women is a matter of concern for many states in India (*National Family Health Survey (NFHS-5)*, 2021). It is hence a matter of concern and require a special emphasis on issues of female health.

Around 65 to 80% of consumers of herbal supplements or medicines are reported globally, and women are frequent users (Forster et al., 2006). Women rely on herbal medicines for chief complaints related to reproductive health namely menstruation disorders, infertility,

discomforts of pregnancy, and menopause, rather than infectious or surgical needs. The major cause of alternative medicines consumption however has been pregnancy as 7% to 96% of parturient are reported utilizing herbal drugs. Notable purposes for which women rely on herbs are for abortion or to prevent abortion (antiabortifacient), contraception or for infertility reasons, for debility or mental health, and for various conditions of menstruation like dysmenorrhea (painful menstruation), amenorrhea (absence of menstruation) or menorrhagia (excessive and prolonged bleeding) (Forster et al., 2006). Pregnancy in women can be divided into three major physiological phases antenatal, parturition, and the postpartum period. Pregnancy involves various organs of the body and brings about systemic changes in physiology compared to non-pregnant females. Of the 280 days of the average gestation period, babies born between 39 0/7 and 40 6/7 weeks are called full-term birth (Simon et al., 2019). During antenatal, the uterus must undergo extreme changes to accommodate the fetus, as its volume capacity increases from 10ml to 5 L. Cardiac output of the parturient increases by 30% to 60%, total lung capacity decreases by 5% due to diaphragm elevation, and nausea and vomiting due to elevated levels of estrogen, progesterone, and human chorionic gonadotropin (hCG) are common changes (Pascual & Langaker, 2022). During parturition, blood loss is attributed to postpartum hemorrhage as nearly 500 ml for vaginal delivery and can be as high as 1500 ml in some cesarean birth (Kankara et al., 2015). Postpartum challenges for mothers include psychological changes as well as breastfeeding. Insufficient breastfeeding is reported in 75% population worldwide due to one or the other reasons (Gbadamosi & Okolosi, 2013).

Often herbal supplements are used by women during pregnancy, childbirth, and breastfeeding phases due to their socioeconomic belief, easy access, and cheaper alternative (de Wet & Ngubane, 2014; Uniyal et al., 2006). Globally many studies have been done regarding gynecological and obstetric purposes of herbal usage. A Thailand study reported 28 plant species used in dysmenorrhea, amenorrhea, and morning sickness. A Cameroon study reports the usage of 46 plants in infertility, by 25% of infertile participants (Telefo et al., 2011). As an alternative to costly and socially unacceptable pregnancy, 45% of Tanzanian rural females used plants as an abortifacient (induction of abortion) (Nikolajsen et al., 2011). An ethnobotany survey of Q'eqchi Maya of Guatemala reported 48 plants used in the treatment of physiological changes related to pregnancy, childbirth, menstruation, and menopause of

which 20 species were evaluated by bioassays (Ferrier et al., 2018). Various clinical trials have also been done to establish the relevance of these ethical reports. However, only two were proven positive galactagogue herbs out of 14 tested, demanding more clinical studies in this field of science (Kwan & Abdul-Rahman, 2021). A major reason for the popularity of herbal practices is their easy availability over-the-counter during pregnancy (Conover, 2003; Kuruvilla, 2002).

From a National perspective, India is a country of diversity in traditions and culture. Herbal or Ayurveda and other traditional medicine systems like Unani, Siddha, Homeopathy, and Naturopathy are very popular here (Vaidya & Devasagayam, 2007). Studies done in the field of ethnobotany in India have documented a tremendous wealth of cultural knowledge (Bhatia et al., 2014; Namsa et al., 2011; Singh et al., 2002; Vijayakumar et al., 2015; Xavier et al., 2014). A study reported a variety of supplementary food consumed by lactating mothers, like ajwain ka laddu, gond ka laddu, battia ka laddu, haldi laddu, lidh and soth ka laddu (all are balls made using jaggery & flour) (Kaushik & Mathew, 1988). A study performed in Chitrakoot district of Madhya Pradesh, reports 41 plant species exclusively used as part of traditional delicacies with medicinal value for postnatal care (Chaturvedi et al., 2017). Another report from Rajasthan presents 27 plant species used for women's health including Leucorrhea, aphrodisiac, contraceptive, and sexually transmitted diseases (Gupta & Solanki, 2013).

Scholars of Gujarat have significantly contributed to the ethnobotany of women and child health (Sengupta et al., 2016). After an extensive field survey, the utility of 61 plant species in problems namely ovum growth, maintenance & management of pregnancy, parturition, puerperal disorders, sutikarog, and insufficient lactation is reported (Jadeja et al., 2006). Another study reports 80 species belonging to 72 genera of 52 plant families present valuable knowledge of tribals namely Maldhari, Koli, Bhil, Adivasi, Garasia, etc. (Jadeja et al., 2005). In a survey on culturally accepted herbal food recipes, Methipak, a bitter fenugreek delicacy, was found to be consumed by 27% of pregnant women and 85% during lactation (Mital & Gopaldas, 2010).

Many efforts have been done to validate the vast knowledge reported ethnically using clinical testing. Efficacy and safety are always questioned for traditional knowledge as its rigorous scientific validation are required (Bernstein et al., 2021; Westfall, 2001). A study poses the

risk of nephrotoxicity, neurotoxicity, hepatotoxicity, genotoxicity, and teratogenicity of traditional medicines, as data on these aspects remain scarce (Bruno et al., 2018).

Considering the fact worldwide women are using traditional and alternative medicines for treating common problems related to reproductive health, it creates a necessity for scientific documentation and validation. This very scientific notion makes the basis to expedite the present study.