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AN OVERVIEW OF HEALTH RESEARCH AMONG TRIBES IN KARNATAKA STATE

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Abstract

The southern Indian state of Karnataka, historically associated with numerous esteemed kingdoms and princely states in the Deccan region, boasts a rich tapestry of historical, cultural, and anthropological heritage. It is home to 4,248,987 tribal individuals, with 50,870 classified as belonging to primitive groups. Although they constitute only 6.95 percent of the state's total population, the Government of India recognizes 50 distinct tribes residing in Karnataka, 14 of which, including two primitive tribes, are indigenous to the region. Generations of extreme poverty and neglect have adversely affected their health and nutrition. Despite initiatives from both governmental and non-governmental organizations, there is a notable lack of literature assessing the health status of these tribal communities. Interestingly, many of these tribes, originally inhabitants of the Western Ghats forests, possess extensive knowledge of various medicinal plants and their applications in traditional and folklore medicine, which have been the focus of several scientific investigations. This article aims to catalog and map the diverse tribes of Karnataka while reviewing existing studies on the health of these ethnic groups and the insights gained regarding their traditional health practices.

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1.0 INTRODUCTION

Karnataka was established on November 1, 1956, following the enactment of the States Reorganisation Act. Initially referred to as the State of Mysore, it was renamed Karnataka in 1973, with Bengaluru, the largest city, serving as its capital. The state is bordered by the Arabian Sea and the Lakshadweep Sea to the west, Goa to the northwest, Maharashtra to the north, Telangana to the northeast, Andhra Pradesh to the east, Tamil Nadu to the southeast, and Kerala to the southwest. Covering an area of 191,976 square kilometers (74,122 square miles), Karnataka accounts for 5.83 percent of India's total geographical area, making it the seventh largest state in terms of size. According to the 2011 census, it ranks eighth in population, with 61,130,704 residents. The state is divided into 30 districts, and Kannada is the predominant and official language. In addition to the Kannadigas, Karnataka is home to Tuluvas, Kodavas, and Konkanis, as well as smaller communities of Tibetan Buddhists. The Scheduled Tribe population includes well-known tribes such as the Soligas, Yeravas, Todas, and Siddhis, which together represent 6.95 percent of Karnataka's total population. Currently, there are 50 Scheduled Tribes recognized in Karnataka as per the Constitution (Scheduled Tribes) Order (Amendment) Act 2003. A list of these tribes, along with their populations and the districts where they predominantly reside, is available, with 14 tribes being either exclusive to Karnataka or primarily found within the state.

Karnataka was formed on November 1, 1956, as a result of the States Reorganisation Act. Originally named the State of Mysore, it was renamed Karnataka in 1973, with Bengaluru as its capital and largest city. The state is situated along the western coast, bordered by the Arabian Sea and the Lakshadweep Sea, with Goa to the northwest, Maharashtra to the north, Telangana to the northeast, Andhra Pradesh to the east, Tamil Nadu to the southeast, and Kerala to the southwest. Spanning an area of 191,976 square kilometers (74,122 square miles), Karnataka represents 5.83 percent of India's total land area, making it the seventh largest state in the country. According to the 2011 census, it ranks eighth in terms of population, with 61,130,704 inhabitants. The state is organized into 30 districts, and Kannada serves as the primary and official language. In addition to the Kannada-speaking majority, Karnataka is home to communities such as the Tuluvas, Kodavas, and Konkanis, along with smaller groups of Tibetan Buddhists. The Scheduled Tribe population includes significant tribes like the Soligas, Yeravas, Todas, and Siddhis, which collectively make up 6.95 percent of the state's total population. Currently, Karnataka recognizes 50 Scheduled Tribes under the Constitution (Scheduled Tribes) Order (Amendment) Act 2003, with 14 tribes either exclusively or predominantly residing in the state.

The southern Indian state of Karnataka, historically linked to a variety of prominent kingdoms and princely states in the Deccan region, features a diverse and rich historical, cultural, and anthropological legacy. The state is home to 4,248,987 tribal individuals, with 50,870 identified as belonging to primitive groups. Although they represent only 6.95 percent of the overall population, the Government of India recognizes 50 distinct tribes in Karnataka, 14 of which, including two primitive tribes, are native to the area. Generations of severe poverty and neglect have negatively impacted their health and nutrition. Despite efforts from both governmental and non-governmental organizations, there is a significant gap in literature evaluating the health status of these tribal communities. Notably, many of these tribes, originally from the forests of the Western Ghats, possess a profound understanding of various medicinal plants and their uses in traditional and folk medicine, which have been the subject of numerous scientific studies. This article seeks to document and map the various tribes of Karnataka while reviewing existing research on the health of these ethnic groups and the knowledge gained regarding their traditional health practices.

2.0 THE TRIBES OF KARNATAKA STATE

The Adiyani tribe primarily resides in Mysore and the districts adjacent to Kerala, communicating in Kannada. Their population is limited to 758 individuals, with the majority engaged in agricultural labor. This community faces economic challenges and has a low literacy rate. Marriages among cousins are a common practice within the tribe. In contrast, the Barda tribe, numbering 266, is found in the northern districts of Karnataka, having migrated from Gujarat and Maharashtra. They converse in the Barda language, which bears similarities to Marathi and Gujarati, and are predominantly agricultural laborers who practice endogamy. The Bavacha/Bamcha tribes, consisting of 960 members, are Hindu and speak the Bavchi dialect, primarily residing in the Ramanagar district. The Bhils, an indigenous group of Central Indian origin, are categorized into various endogamous territorial divisions, each containing multiple clans and lineages. While many Bhils now communicate in the local languages of their respective regions, they historically engaged in hunting and military roles. Presently, they are mainly agricultural workers, although hunting and gathering still play a notable role in their subsistence. In Karnataka, the Bhil population stands at 6,204, with a significant concentration in the Uttara Kannada and Belgaum districts.

The Chenchus are an indigenous tribe primarily residing in the forests of Andhra Pradesh, where they communicate in the Chenchu or Chenchwar language, a dialect of Telugu. Approximately 954 members of this tribe can be found in the neighboring districts of Karnataka, such as Yadgir and Kolar. As one of the original primitive tribal groups, the Chenchus rely heavily on the forest for their livelihood, engaging in hunting rather than agriculture. However, some members have developed a symbiotic relationship with non-tribal communities, and many gather forest products for sale to these groups. In contrast, the Chodharas, a smaller group of around 117 individuals, reside in Karnataka, while the majority of their approximately 20,000 members live in Gujarat and Maharashtra. The Chodharas are connected to the Rajputs and communicate in the Chodri language. Most members of the Chodhari community are involved in small-scale farming, cultivating crops such as cotton, vegetables, and rice.

The Dublas, also referred to as Talavia or Halpati, are Hindu tribes that trace their origins to the Rajputs in the regions of Gujarat and Maharashtra. The Dubla community is composed of various endogamous sub-divisions, with

agriculture being their main source of livelihood. Their population is relatively small, totaling 264 individuals, and they are dispersed across the state. The Gamit tribe, known by several names including Gamit, Gavit, Mavchi, and Pandvi, speaks the Gamit language. There are approximately 516 members of this tribe residing in Karnataka, primarily located in Koppal and other districts. The Gond tribe represents the largest group of Dravidian people in central India, found across multiple states, including the northwestern districts of Karnataka, making them the second largest tribal community in the state. The Gondi language shares similarities with Telugu and other Dravidian languages. According to the 2011 Census, the Gowdalu population stands at 8,617, and they communicate in the Gowdalu language. This group is predominantly located in the Chikmagalur and Bengaluru Urban districts. The Hakki-Pikki clan is a semi-nomadic community residing near Bidadi in Karnataka, with a population of 11,892 as recorded in the 2011 Census. Traditionally engaged in hunting, many members of this tribe are now increasingly pursuing agriculture and floral decoration. The Hasalaru are another Hindu tribe in Karnataka, numbering 24,466 and speaking Tulu, with a concentration in districts such as Chikmagalur, Shimoga, Udipi, and Davangere. The Irular tribe in Karnataka consists of about 700 individuals, primarily found in the Nilgiri Hills of neighboring Tamil Nadu and Kerala, and is classified under the Primitive Tribe Group. They are Hindus and speak Irula, a language related to the Dravidian languages Tamil and Kannada. Descendants of gypsies, the Irular have a history of living in caves and engaging in hunting and gathering, later adopting agriculture. Inter-marriage within the same clan is not practiced, and their literacy rate is notably low at 36.27 percent. The Iruliga are predominantly a tribal community located in Karnataka, with an estimated population of approximately 10,259 individuals, primarily residing in the Ramanagar and Bengaluru Urban districts. They practice Hinduism, and although Kannada is their main language, several other languages are also spoken within the community.

The JenuKuruba population in Karnataka stands at 36,076, primarily residing in the districts of Mysore, Kodagu, and Chamarajanagar. A small number can also be found beyond the state's borders, particularly in the forested areas of Tamil Nadu and Andhra Pradesh. Known as 'Then Kurumba' or 'KattuNaikar,' they belong to a primitive tribal group and are predominantly engaged as daily laborers for landlords in local plantations. This community is tightly knit and tends to have limited interactions with neighboring tribal groups. The literacy rate among them is 47.66 percent. The Kadu Kurubas, numbering approximately 11,953, are the original inhabitants of the forests in Nagarhole and Kakanakote within the Western Ghats of Karnataka. They primarily reside in Mysore, Kodagu, Chamarajanagar, and other districts, with some living in the forests of Tamil Nadu. The Kadu Kurubas are mainly Hindus and communicate in Kannada. The Kammara tribe is located in the Dakshina Kannada district and Kollegal taluk of Chamarajanagar district, with a population of 949. They speak the local language, and many members are dispersed across Andhra Pradesh, Odisha, and Chhattisgarh. Their traditional occupations include blacksmithing, carpentry, and agriculture. The Kaniyan tribe, originating from Kerala, is primarily found in Kollegal taluk of Chamarajanagar district, with only 413 individuals residing there. They speak the local dialect, although most members communicate in Malayalam, and they predominantly practice Hinduism. Among the approximately 300,000 individuals belonging to the Katkari and Marathi-Konkani speaking Kathodi or Katkari tribe, only a small group of 275 resides in Karnataka. The Kathodi are recognized as a primitive tribal group by the Government of India, particularly in the state of Gujarat.

Approximately 168 members of the Kattunayakan tribe, which has a total population of around 70,000 primarily residing in Tamil Nadu, Kerala, and Pondicherry, are dispersed across various districts in Karnataka. This tribe is classified as a primitive tribe in Kerala. A very small population of the Kokna tribe, numbering just 32 individuals, is also found in several districts of Karnataka, with the majority practicing Hinduism. Their main language is Kukna, which is likely derived from Konkani. Karnataka holds the third largest population of the KoliDhor tribe, totaling 112,190 individuals, who are primarily located in the northern and northwestern regions of the state, including Bidar, Yadgir, Gulbarga, and Bijapur. The Konda Kapu tribe has around 7,438 members residing in Karnataka, mainly in districts adjacent to Andhra Pradesh. The Koraga tribe is recognized as one of the two primitive and most disadvantaged tribes by the Government of India. This tribe is not only significant within Karnataka but is also categorized as a primitive tribal group. They are spread across multiple districts in the state, particularly in Udipi and Dakshina Kannada, with smaller populations in Haveri, Shimoga, Uttara Kannada, and Kodagu. According to the 2011 Census, their total population is 14,794.

Koragas allocate a significant portion of their income to alcohol, which is consumed across all age groups. They also engage in smoking beedi and chewing betel. Their diet primarily consists of rice and meats, particularly pork and beef, though there is a growing trend towards incorporating pulses and vegetables. Overall, their nutritional intake is inadequate, leading to prevalent malnutrition among children. The education levels within this community are notably low. The Kota tribe, a small ethnic group native to the Nilgiri Hills in Tamil Nadu, is classified as a primitive tribal group, with a population of approximately 1,500, of which around 121 reside in Karnataka. This tribe has been the subject of extensive anthropological, linguistic, and genetic research. In Karnataka, particularly in the Bidar district, there are about 365 members of the Koya tribe, which is significantly larger in neighboring Andhra Pradesh. The Kudiya tribe, primarily found in Karnataka, has a population of 2,169 individuals, mostly concentrated in the Kodagu district. The Kuruba people inhabit the densely forested slopes and foothills of the Nilgiri plateau, with a population of 3,111 in Karnataka. The Kuruman tribe, also from Karnataka, consists of only 347 individuals, primarily located in Tamil Nadu and Kerala, and they communicate in the southern dialect of Kannada. The MahaMalasar tribe is a very small ethnic group residing in the Annamalai Hills of South India, with around 36 individuals in Karnataka, while the majority live in Tamil Nadu and Kerala. The Malaikudi tribe, another ethnic group in Karnataka, has a population of approximately 9,236, mainly in the Sahyadri hill ranges of Dakshina Kannada, Udipi, and Chikmagalur districts. They speak a dialect of the Dravidian language, Tulu, and use Tulu and Kannada for communication between groups. The Malasar tribe has about 9,100 members in Tamil Nadu and Kerala, with around 84 residing in Chikmagalur district of Karnataka, speaking a blend of Malayalam and Tamil.

The Malayekandi tribe is also recognized under the names Malaikudi and Maleru. In Karnataka, there are approximately 116 individuals from these tribes out of a total of around 2,000. Besides the Chikmagalur district, these tribes are dispersed across Koppal, Raichur, and Gulbarga districts. The Maleru tribe consists of about 440 members and is predominantly found in Karnataka. Their primary habitats include the districts of Chikmagalur, Shimoga, Davangere, Dakshin Kanada, Udupi, Hassan, and Kodagu. The Maratha community in Kodagu and the Marati community in Dakshina Kannada have been granted tribal status exclusively within these districts of Karnataka. According to the 2011 census, there are 3,396 Maratha individuals in Kodagu and 82,447 Marati individuals in Dakshin Kannada. These groups primarily communicate in Marathi among themselves, while they use Tulu and Kannada when interacting with others. Generally, they follow a vegetarian diet.

In Karnataka, there exist two distinct communities named Meda; one of these is confined to the Kodagu district, where the residents speak Kodagu, a Dravidian language. In other regions of Karnataka, another group of basket-makers referred to as Meadar or Meda can be found. The Meda community is predominantly located in Karnataka, with an estimated population of approximately 44,160 individuals distributed across various districts. The Nayaka tribe, whose name translates to 'leader,' primarily follows a non-vegetarian diet. This group, also known by names such as Palegar, Beda, Valmiki, and RamoshiParivara, is widespread throughout the state, with a significant concentration in the Chitradurga, Shimoga, Bellary, and Tumkur districts, totaling a population of 3,296,354. The Paliyan, also known as Palaiyar or Pazhaiyarare, comprise over 10,000 Adivasi Dravidian individuals residing in the mountainous rainforests of the Western Ghats in southern India, particularly in Tamil Nadu and Kerala. A small population of about 226 Paliyans can be found in the southern part of Karnataka, mainly in the Kodagu district. Most members of this tribe engage in trading forest products, agriculture, and beekeeping. Additionally, around 495 individuals from the Paniyan tribe live in Karnataka, primarily in the southern districts of Kodagu, Dakshin Kannada, and Mysore. The Pardhis are a migratory group dispersed across central India, including the states of Andhra Pradesh, Madhya Pradesh, Gujarat, Maharashtra, and Karnataka. In Karnataka, their population is approximately 10,746, with a notable presence in the districts of Dharwad, Bagalkot, Gadag, Bijapur and Gulbarga are notable regions. The Pardi language, classified among the Bhil languages, is spoken by the Patelia tribe, of which only 57 members reside in Karnataka, primarily in the Bidar district. The Rathwas, whose name is derived from 'rathbistar'—meaning forest or hilly region dwellers—constitute a moderately sized tribe, yet only 45 individuals are found in Karnataka, with a few residing in Bengaluru Urban and Bidar districts. This tribe is endogamous and comprises several exogamous clans, with most members engaged in small to medium-scale farming. The Soliga/Sholiga and Sholigaru/Soligaru tribes inhabit the Biligirirangan (BR) Hills and surrounding ranges in southern Karnataka, particularly in the Chamarajanagar and Erode districts of Tamil Nadu. A significant population is also found in the BR Hills area, specifically in Yelandur and Kollegal taluks of Chamarajanagar District. They commonly use the title Gowda, which translates to headman. In Karnataka, their presence is mainly in the hilly regions of Mysore district, as well as in Ramanagar and Mandya, characterized by forested landscapes, low humidity, and substantial rainfall. Their diet is predominantly vegetarian, focusing on tubers. The Toda tribe, one of the oldest and most unique tribes in the Nilgiri Hills of Tamil Nadu, has a mere 157 members in Karnataka, located in Udupi district. The Todas possess their own language along with distinct customs and regulations. The Varlis/Warlis, recognized as Adivasis, inhabit both mountainous and coastal regions along the Maharashtra-Gujarat border and its vicinity. In Karnataka, only 58 Varlis are present, primarily in Kodagu and Koppal districts. Additionally, the Vitolia group is extremely small, consisting of just 23 individuals scattered across various districts, including Koppal, Belgaum, and Bengaluru.

They are thought to be descendants of the Gambit tribe and have historically been viewed as untouchables. The Government of Gujarat classifies Vitolia as part of a primitive tribal group, where they are predominantly located. Some individuals may have migrated to Karnataka from southern Gujarat and Maharashtra in earlier times. Their literacy rate stands at 43.8 percent. Several centuries ago, the Yerava/Ravula tribe was a prosperous community engaged in agriculture and forestry, primarily in the Wayanad and Kodagu districts of Kerala and Karnataka, respectively. According to the 2011 census, their population in Karnataka is 30,359, mainly concentrated in the Kodagu and Mysore districts. The Siddis tribe in Karnataka represents an ethnic group with a population of approximately 50,000 across India. About 10,477 of them reside in the Uttara Kannada district, specifically in the taluks of Yellapur, Haliyal, Ankola, Joida, Mundgod, and Sirsi, as well as in Khanapur of Belgaum district and Kalghatgi of Dharwad district.

3.0 DEMOGRAPHY

The tribal population in Karnataka, as recognized by the Government, comprises approximately 42,48,978 individuals, representing 6.95 percent of the state's total population. Over the last ten years, there has been a notable 6 percent increase in the tribal population, compared to 2001 when it stood at 6.6 percent with 34,63,986 individuals. Among the districts, Bellary stands out with the highest percentage of Scheduled Tribes (ST) population, accounting for 10.6 percent of the state's ST population, followed closely by Raichur at 8.6 percent, Mysore at 7.8 percent, Chitradurga at 7.1 percent, and Belgaum at 6.9 percent.

The districts with the largest tribal populations include Bellary with 4,51,406 individuals, Raichur with 3,67,071, Mysore with 3,34,547, and Chitradurga with 3,02,554. In terms of ST population as a percentage of the total district population, Raichur takes the lead with 19.03%, closely trailed by Bellary at 18.41% and Chitradurga at 18.23%. Notably, a substantial majority of the ST population in Karnataka resides in rural areas, making up 84.7% of the total. Among the major tribal groups, KoliDhor holds the highest rural demographic at 92.2%, followed by Gond at 91.7%, Marati at 90.8%, and Naikda at 85.1%.

The distribution of the ST population is spread across all 30 districts of the state, with significant concentrations in Bellary, Raichur, Mysore, Chitradurga, Belgaum, Davanagere, and Tumkur, accounting for 52 percent of the ST

population. The remaining 48 percent disperses among the other 23 districts, signifying the widespread presence and importance of the tribal communities throughout Karnataka.

a. Literacy rate

The literacy rate among Scheduled Tribes in Karnataka raises concerns, as it remains consistently lower than that of the general population. The literacy rate for these tribes rose from 36.0 percent in 1991 to 48.3 percent in 2001, and further to 53.9 percent in 2011, while the overall state average increased from 66.64 to 75 percent during the same period. Within Karnataka, the literacy rate for the tribal population is 51 percent in urban areas and 65.7 percent in rural areas, compared to the state averages of 60.4 percent in rural and 76.2 percent in urban areas. Notably, the male literacy rate is significantly higher at 57.5 percent compared to 42.5 percent for females. Among the major Scheduled Tribes, the Toda exhibit the highest literacy rate at 78.9 percent, followed by Malayekandi at 78.45 percent, Maleru at 74.77 percent, Maratha at 74.09 percent, and Patelia at 73.68 percent. The female literacy rate among the tribal population, recorded at 42.5 percent in the 2011 census, has seen a slight increase from 41.72 percent in 2001, yet it remains lower than the overall female literacy rate in the state, which is 44.62 percent.

4.0 HEALTH STATUS OF THE TRIBES

The health requirements and challenges faced by any community are shaped by a complex interplay of socio-economic and political elements. Numerous studies have examined tribal groups, their cultural practices, and the effects of acculturation on these societies. To ensure that the tribal population receives essential primary health care, the establishment of Primary Health Centres (PHCs) in districts with a significant tribal presence has been a key component of various tribal development initiatives launched in the country since 1947. However, these PHCs have encountered persistent issues, including unresponsive auxiliary nurse midwives (ANMs), inconvenient operating hours, and minimal community engagement. Furthermore, a lack of accountability has resulted in absenteeism among doctors, making it consistently difficult to attract qualified medical professionals to tribal regions.

Karnataka currently has operational Primary Health Centres (PHCs) serving a rural population of approximately 20,000 in hilly and tribal regions, along with Subcentres catering to an additional 3,000 individuals. Despite initiatives from both governmental and non-governmental organizations aimed at improving primary health care access for these marginalized groups, there is a notable scarcity of research concerning the health conditions of the state's tribal communities. Most studies have focused on a limited number of tribes, including the JenuKuruba, Koraga, Iruliga, Hakki-Pakki, and Siddis. The lack of comprehensive data on the prevalence of various communicable and non-communicable diseases within these communities hampers the government's ability to formulate effective health strategies. Existing research primarily addresses topics such as the genetic origins and relationships among certain tribes, the availability and utilization of healthcare facilities, and issues like anemia, hypertension, nutritional status, lifestyle-related disorders, and oral hygiene. However, there is a significant gap in information regarding the status of communicable diseases in these populations. This document summarizes the available data on the health status and research conducted on the tribal populations of Karnataka.

a. Genetic Studies

A comprehensive genome-wide analysis was conducted utilizing autosomal markers to explore and elucidate the population history of the Siddis. This research established their connections to Africans, Indians, and Europeans (specifically the Portuguese), thereby affirming existing theories regarding their origins. Additionally, the genetic relationships among the JenuKuruba, Betta Kuruba, and Soliga tribes in southern Karnataka were examined through ten polymorphic genetic markers. The findings indicated that the JenuKuruba and Soliga tribes, which displayed minimal inter-group genetic distance, formed a close cluster, while the Betta Kuruba tribe, characterized by a relatively greater genetic distance from the other two, was positioned outside this cluster. Nonetheless, the overall low genetic distance among these tribes suggests a recent divergence or a limited degree of genetic isolation.

b. Availability and Utilization of Health Care

An investigation was conducted among the Koraga tribes in the Dakshina Kannada district to evaluate the availability and accessibility of essential facilities, as well as to assess their utilization of health care services. The findings indicated that the literacy rate among the Koraga population, for both genders, stood at 70.5 percent, surpassing the state-level literacy rate for Scheduled Tribes. Furthermore, the study highlighted the issue of poverty affecting Koraga families. It emphasized the need for enhanced efforts to improve their housing, sanitation, literacy, and employment conditions, which are crucial for elevating their overall quality of life.

c. Nutritional Status

The nutritional status of tribal populations is significantly impacted by practices such as delayed initiation of breastfeeding, avoidance of colostrum, and improper weaning methods. These issues are exacerbated by adverse conditions, including limited access to healthcare, low literacy rates, and poor hygiene practices. A study focusing on the breastfeeding behaviors of the Hakki-Pikkis, a tribal group in the Mysore district, found that approximately 76 percent of participants began breastfeeding immediately after birth. In contrast, 20 percent initiated breastfeeding on the second day, while 4 percent did so on the third day. Among the 24 percent of mothers who refrained from feeding colostrum, common beliefs portrayed it as thick, cheesy, indigestible, unhygienic, and unsuitable for infants. This study underscores the urgent need for awareness programs aimed at educating mothers in these communities about proper feeding practices and dispelling myths surrounding breastfeeding. The authors suggested that the

prevalence of inadequate infant and child feeding practices may be associated with high illiteracy rates and challenging socio-economic conditions. Consequently, the study emphasizes the necessity for comprehensive literacy initiatives, income-generating programs, and health education efforts by healthcare professionals within these tribal groups.

Malnutrition remains a significant public health challenge in numerous countries, impacting over 30 percent of children under the age of five, particularly within tribal communities. A community-based study was conducted to assess the nutritional status of the JenuKuruba tribes in the Mysore district, involving 220 children aged 1 to 5 years. The findings revealed prevalence rates of underweight, stunting, and wasting at 38.6%, 36.8%, and 18.6%, respectively. Notably, the study indicated that the rate of underweight increased with the child's age and identified a correlation between malnutrition and adverse socio-demographic factors. National Family Health Survey (NFHS) data reported overall prevalence rates of underweight, stunting, and wasting among the Scheduled Tribe (ST) population in India at 54.5%, 54%, and 27.6%, respectively. In contrast, Karnataka's rates were recorded at 33.3%, 42.4%, and 18.9%. Additionally, a community-based cross-sectional study involving tribal women aged 14 to 49 years in Udupi taluk of Udupi district found an alarming anaemia prevalence of 55.9%. Previous research on the JenuKuruba tribes indicated a 77.1% prevalence of anaemia among children. The World Health Organization (WHO) classifies populations with a 40% or higher prevalence of anaemia as severely anaemic. Collectively, these studies highlight the urgent need for nutritional interventions within tribal populations.

In 2011, a research study was conducted to evaluate the nutritional status of JenuKuruba and Yerava tribal children in the Mysore district of Karnataka. The study involved 176 JenuKuruba children (80 boys and 96 girls) and 161 Yerava children (77 boys and 84 girls), all aged between 6 and 10 years. Findings indicated that the adequacy percentages for energy and protein intake were relatively similar across both tribal groups, although both were below the recommended dietary allowances. Additionally, the intake levels of calcium, iron, and beta-carotene varied with age, with Yerava children showing higher beta-carotene consumption. Furthermore, JenuKuruba children had a greater intake of calcium-rich foods compared to their Yerava counterparts.

d. Chronic and Lifestyle Diseases

In a comprehensive study carried out within the JenuKuruba tribe residing in the Hunsur taluk of the Mysore district, individuals ranging from 20 to 60 years of age were assessed to determine the prevalence of hypertension. This study encompassed a significant sample size of 1,290 participants, which represented around 80% of the entire tribe population in the region. Notably, within this cohort, there were 719 women, constituting 55.7% of the participants, and 571 men, making up 44.3% of the total group. Remarkably, it was found that half of the participants belonged to the age group of 20 to 30 years, shedding light on the predominance of younger individuals in the study. The study's outcomes uncovered a notable hypertension prevalence rate of 21.7% within the JenuKuruba tribal community. Specifically, the prevalence of hypertension was discerned to be 28.2% among men and 16.5% among women, suggesting that approximately one-third of men and one-fifth of women in the tribe were affected by hypertension. Interestingly, this prevalence figure closely mirrors the 25% hypertension prevalence estimated by the National Nutrition Monitoring Bureau (NNMB) for rural adults on a national scale, underscoring the alignment of the tribal data with broader national trends. This study significantly raises awareness regarding the burden of hypertension within tribal groups, highlighting the importance of healthcare interventions for these populations. Moreover, the research extended to examining liver damage in chronic alcoholics from the Koraga tribe, comparing them with healthy individuals and other alcoholics. Serum and urine samples were meticulously gathered from a diverse group of 28 Koraga alcoholics, 30 general alcoholics, and 31 healthy controls, which were then assessed for various liver function indicators and antioxidant levels. The study's outcomes intriguingly indicated that despite the higher alcohol consumption among Koraga subjects, the degree of alcohol-related liver damage observed in them was notably lower than that detected in general alcoholics. This disparity suggests the existence of a potential protective mechanism within the Koraga tribe, contributing to their enhanced resilience against alcohol-induced liver damage, thereby opening avenues for further investigation into their unique biological defenses.

e. Oral health

A research study involving 2,605 individuals from the Iruligas, an indigenous tribe in Karnataka, was conducted across 26 villages in the Ramanagar district to evaluate their periodontal health and oral hygiene habits. The findings indicated a notably low occurrence of periodontal disease within this group, likely attributed to the widespread use of chew sticks, which was reported by approximately 80 percent of the tribal community.

f. Ethnomedicinal practices

The traditional health practices in Karnataka reflect the state's ethnic diversity, influenced by varying cultures, ecological conditions, geography, climate, and vegetation. Each district possesses its own distinct traditional health practices, primarily shaped by the cultural backgrounds of tribal communities and the availability of natural resources, particularly crude drugs sourced from the rich biodiversity of the Western Ghats. Research on ethnomedicine in Karnataka has largely focused on documenting medicinal plants from specific geographical or tribal regions, targeting particular diseases or communities. Studies examining traditional, tribal, and folklore medicinal practices within specific geographical areas, talukas, or districts have included contributions from both tribal and non-tribal populations. Notable documentation efforts have captured ethnomedicinal practices from districts such as Tumkur, Bengaluru, Chikmagalur, Kodagu, Mysore, Raichur, Bidar, Gadag, and Belgaum. Additionally, traditional medicinal practices have been recorded in specific talukas and locations, including coastal Karnataka, Bhadravati, Sringeri, Sagar, and Kukke Subramanya. The documentation of these traditional practices for

specific diseases integrates information from both tribal and non-tribal communities in the region, with significant focus on conditions such as jaundice, snake bites, gynecological disorders, reproductive health, skin diseases, oral health, bone fractures, wounds, and malaria.

Research on specific tribes is limited, with many studies lacking comprehensiveness. The ethnomedicinal practices of the following tribes have been recorded: JenuKuruba: The lesser-known ethnomedicinal applications of plants utilized by the JenuKuruba tribe in Mysore district were documented by Kshirsagar and Singh. Their report included scientific and local names, geographical distribution within the district, plant family classifications, preparation methods, uses, and administration techniques for 25 medicinal plants traditionally employed in Mysore but not widely recognized in other areas. Another investigation focused on the traditional medicinal knowledge of the tribe from Kodagu (Coorg) district, utilizing structured questionnaires in collaboration with tribal practitioners and patients. This effort led to the documentation of 20 medicinal plant species used to address 21 different ailments, highlighting the tribe's ethnobotanical knowledge and the necessity for further research and documentation in this field. KhareVokkaliga: The KhareVokkaliga is a small ethnic group residing in the Uttara Kannada district of Karnataka. Achar et al. conducted research on their ethnomedicinal practices, documenting the use of 57 plant species for treating 39 ailments. Among these, 20 species are employed for six infectious diseases, while 44 species are used for 33 non-infectious conditions.

Siddis: Bhandary et al. identified 98 medicinal preparations utilized by the Siddis for various health issues, derived from 69 different plant species. Soliga: A comprehensive documentation of the ethnobotanical knowledge of the Soliga tribe has been conducted. The authors highlighted the use of 57 plant species by the tribe for addressing various health concerns. Additionally, they described the lifestyle, culture, rituals, and traditional health practices of the Soliga community in the Chamarajanagar district. It was observed that the Soligas have a profound and ongoing relationship with the forest, from which they obtain most of their essential needs. This close connection to nature fosters a holistic perspective on life, reflected in their indigenous knowledge. Kunabi: The ethnomedicobotanical practices of the Kunabi tribe were explored by Harsha et al., who documented 45 plant species used to treat 24 different ailments. Among these, six species were specifically noted for their effectiveness against allergies and skin conditions, five for treating sores and inflammation, and four each for managing fever, cuts, wounds, and urinary tract infections. Gowlies: Bhandary et al. reported on the medicinal plants employed by traditional healers of the Gowli tribe in the Uttara Kannada district of Karnataka. They documented the use of 41 plant species in the tribe's medicinal practices, providing detailed information on the parts utilized, preparation methods, dosages, treatment durations, and botanical characteristics of the plants.

In Gulbarga, Rajasab and Isaq identified 51 species of common plants utilized by the Lambani community for healthcare purposes. Additionally, a study has highlighted the use of 30 plant species for primary healthcare among ethnic groups such as Halakki, Kadu Kuruba, and Lambani in the Bidar district. The traditional application of 25 legume species, particularly in health-related contexts, has been documented among ethnic fishing communities, including Best, Bovi, Gangamathasta, Mogaveera, and Karvi, across 12 locations along the western coast of Karnataka. Hiremath and Taranath noted 15 plants with 12 preparations employed in traditional phytotherapy for snake bites among tribes like Lambanis, Hakki-Pikki, JenuKurubas, and Iruligas in Chitradurga district. In their research on herpes treatment, Bhandary and Chandrashekhara reported 34 formulations derived from 57 plant species, particularly those used by the Koraga, Malekudiya, and HallakkiVokkaliga tribes in Uttara Kannada district. Recently, Bhat et al. documented 102 plant species used for treating skin diseases in Uttara Kannada, sourced from various communities, including HallakkiVokkaliga, Siddi, Kunbi, and Gowli tribes. Despite these extensive studies and findings, there remains a significant gap in the comprehensive documentation of the ethnomedicinal knowledge and practices among the tribes of Karnataka. The invaluable insights of the diverse ethnic population regarding the region's healing herbs are rapidly diminishing, necessitating immediate, systematic, scientific, and thorough documentation. This knowledge should be validated through research and clinical evaluation or a reverse pharmacology approach, ultimately aiming to translate traditional knowledge into effective healthcare practices.

5.0 INITIATIVES BY GOVERNMENT AND NON-GOVERNMENTAL ORGANIZATIONS (NGOS)

The Department of Tribal Welfare was established to specifically cater to the needs of Scheduled Tribes (STs) in Karnataka. The Tribal Sub-Plan (TSP) and its associated Special Component Plan (SCP) were introduced during the National Fifth Five-Year Plan. The TSP aims to alleviate poverty, safeguard tribal culture, enhance education, improve healthcare, and provide essential infrastructure. Poverty alleviation efforts encompass programs in agriculture, animal husbandry, sericulture, horticulture, small-scale industries, and various employment-generating initiatives, including the Swarna Jayanthi Swarozgar Yojana (SJSY). The State Government prioritizes tribal education, with the Social Welfare Department overseeing the educational requirements of these communities. Numerous programs are in place to ensure educational access for students from scheduled tribes, including the establishment of nursery and women welfare centers, Ashram schools (free residential schools), and pre-metric hostels for both boys and girls. Since the 1995-1996 academic year, the Karnataka Government has implemented a scholarship scheme for ST children, benefiting students from 1st to 10th grade, with financial support provided by the Social Welfare Department. In addition to government initiatives, various non-governmental organizations, associations, trusts, and individuals have shown a commitment to enhancing tribal educational welfare in Karnataka. Notably, the Vivekananda Girijana Kalyan Kendra (VGKK) in Mysore district is recognized for its efforts in uplifting the Soliga tribes, offering a residential tribal school, vocational training, and market access for tribal products.

In B.R. Hills, Mysore, the VivekanandaGirijana Kalyan Kendra (VGKK), a non-governmental organization, is actively working to promote the traditional knowledge systems of tribal communities while integrating these with modern medical practices. They are also advocating for the use of herbal medicines based on tribal knowledge. However, the

effectiveness of various initiatives in the areas of health, education, and poverty alleviation remains unclear. The scale of the challenges is significant, as a substantial proportion of tribal families experience poverty and lack access to essential resources that could enhance their educational and health outcomes. The human development indicators for the tribes in Karnataka lag over a decade behind those of the broader population, leaving them as the most impoverished and marginalized group within the state.

6.0 CONCLUSION

The primary focus of the current review is to shed light on the existing gap in research concerning the healthcare status of the ethnic tribes residing in Karnataka, emphasizing the need for further exploration in this area. By pinpointing specific shortcomings in current research, this review aims to pave the way for a more thorough understanding of the unique health challenges faced by these tribes, ultimately leading to improved healthcare strategies catered to their needs. Furthermore, it advocates for the amalgamation of the age-old traditional healing practices of the ethnic tribes with modern-day scientific advancements in healthcare, recognizing the immense potential for enhancing overall well-being within these communities. To achieve this ambitious goal, collaborative cross-sector efforts must be orchestrated involving policymakers, researchers, healthcare providers, as well as non-profit and social organizations, all working in unison towards the shared objective of advancing the health outcomes of the tribal populations in Karnataka.

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