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**Yiatrosafia yia ton Anthropon: Indigenous Knowledge of Medicinal, Aromatic and Cosmetic (MAC) Plants in the Utilisation of the Plural Medical System in Pírgos and Práitoria for Community Health Development in Rural Crete, Greece**

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## Chapter I INTRODUCTION

Crete as the largest island of Greece is situated in the eastern region of the Mediterranean Sea, roughly equidistant from the Asian continent to the East, the African continent to the South and the European mainland to the Northwest. In Greek mythology, Crete is described as the 'Birthplace of Europe', which owes its origin and name to the legend of Princess Europa, who has been kidnapped by Zeus and brought to Crete. Accordingly, archaeological findings substantiate that the ancient civilisation, which developed in Crete between 3000 and 1100 B.C., has been the first civilisation of Europe at large. The age-long history of the Cretan culture with its Minoan, Byzantine, Venetian and Ottoman influences also reveals the richness of people's medical knowledge, practice and belief, which has come to form the basis of the present plural medical system available across the island, particularly in the rural areas. Following the early patterns of human settlement in Crete towards the end of the Neolithic Era, the Minoan people started to adopt naturalistic explanations for the relation between humans and the universe, subject to the laws of nature. In this part of the Mediterranean Region, centred around the Ionian Sea, the view emerged that the human body is composed of four humours - blood, phlegm, yellow bile and black bile - and that disorders in health have been caused by an imbalance among these humours. The most prominent representative of this theory was Hippocrates of Kos (460-370 B.C.), the Founding Father of Classical Greek Medicine.

In the classical Greek ethnomedical system, the human-plant relations played a significant role, as most medicines and treatments have been plant-based, providing the population with a growing body of indigenous knowledge, belief and practice of traditional medicinal plants of the Mediterranean Region. The famous Greek physician, herbalist and pharmacologist Pedanius Dioscorides (40-90 A.D.) wrote a book in five volumes entitled *De Materia Medica* (77 A.D.), which deals with approximately 1.000 simple medicines. For more than 16 centuries, his book has been the primary classical source of modern botanical terminology and the leading pharmacological text with outstanding descriptions of nearly 600 plant species, including Thyme (*Coridothymus capitatus* (L.) Reichenb. Fil. / *Thymus capitatus* (L.) Hoffmanns. & Link), Dill (*Anethum graveolens* L.) and Garlic (*Allium sativum* L.) (cf. Illustration 1.1).

Interestingly, this main theory of the classical Greek ethnomedical system has expanded as 'Unani Medicine' from the Greco-Arabic medical system to the East into Southeast Asia and East Africa as well as to the West into Middle- and South America, where it has established its strong position in traditional medicine today, in which local empirical knowledge and use of plants have successfully been integrated into the local medical system (cf. Foster 1987).

The related early forms of traditional medicine in the island have drawn heavily on the local people's knowledge and use of medicinal plants and home remedies, often in combination with religious and spiritual beliefs of health and disease. The development of local systems of knowledge, practice and belief regarding Medicinal, Aromatic and Cosmetic (MAC) plants in the island date back as far as prehistoric times of the Minoans, and have continued to provide the communities in the island with important practical, readily available natural sources of medicine up until today.

These MAC plants contain several phytochemicals, which have been used over many centuries for numerous therapeutic purposes and since the 20<sup>th</sup> century have served as precursors for pharmaceutical synthesis, substantiating the *Materia Medica* of the Cretan traditional medical system still frequently used throughout the island today. In addition to the historical transfer of such local medical knowledge over generations mainly through the oral tradition, a few written resources in the form of local handbooks encompassing compendia of formulas for medicines, known as '*Yiatrosophia*', which have been compiled by traditional specialists, such as '*Praktiki*', in the island, have further substantiated the 'great' medical tradition of Crete.

In spite of their practical usefulness and historical significance, these local resources of important knowledge and wisdom have so far hardly been studied, most likely in line with the general ignorance and ridiculisation of indigenous knowledge systems, which until recently was so characteristic for the colonial and post-colonial attitude of many scientists and scholars (*cf.* Clark 2011).



Illustration 1.1 Illustration from the *Juliana Codex* showing the Greek herbalist Pedanius Dioscorides receiving the Mandrake plant (*Mandragora officinarum*) from Heurisis, the Goddess of Discovery.  
Source: Schultes *et al.* (2001: 87).

More recently, however, with the upsurge, which has taken place worldwide in the reassessment and utilisation of these traditional MAC plants, not only because of their relative low prices *vis-à-vis* modern medicines, but also because of their evidence-based cultural significance and their efficacy as ‘natural products’ against various chronic diseases, mental disorders and allergies, a growing interest and revaluation have taken place around the globe. As a result, the study and analysis of indigenous knowledge systems in many sectors of the society, such as medicine, environment, agriculture, bio-cultural diversity and community development, have increased (*cf.* Warren, Slikkerveer & Brokensha 1995; Posey 1999; Slikkerveer 1999b).

Concurrently, the demand for medicinal plants and their products on the global market have increased tremendously, especially in developing countries. Similarly in Crete, the continued utilisation of the plant-based medicines over the past centuries has recently experienced a popular increase in home remedies and traditional health and healing practices. Such resilience illustrates today the usefulness and vitality of Cretan traditional medical and botanical knowledge and practice.

The World Health Organisation (WHO) has not only recommended the integration of traditional medicine in formal health care systems around the globe, but has also promoted the accumulation of research-based knowledge on MAC plants and the related evaluation and tests of their efficacy and safety within the framework of Primary Health Care (PHC) (*cf.* WHO 1978).

The remarkable persistence of traditional medicine alongside the more recent pharmaceutical medicines - categorised as transitional medicine - and modern medicine in Crete have eventually established the current plural medical configuration of knowledge, practice and belief, which is reflected in the co-existence of the traditional, transitional and modern medical system. Such rich

heritage of bio-cultural diversity of MAC plants, which has been accumulated by the people of Crete since pre-historic times and which is not related to modern plant-based medicines, constitutes a unique historical and socio-medical environment for the study of the local people's medical knowledge systems as well as their related patterns of health care utilisation behaviour.

The continued existence and use of such traditional medical systems in the rural and mountainous areas of Crete has been well documented since 1986 in a series of pioneering fieldwork training projects of post-graduate students from Leiden University, co-supervised by Professors and Staff from Leiden University, the University of Crete and the National Health Institutions in Crete. Their work has substantially contributed to the selection of the subject and research area for the present study in the villages of Pírgos and Práitoria (1.1).

Although the general aim and specific objectives of this study will be elaborated below in Paragraph 1.4, it appears appropriate to indicate here, that basically, this research is focused on the study and analysis of the utilisation of different systems of medical knowledge, practice and belief by the population of rural Crete with special attention to the role of their indigenous knowledge of MAC Plants in the process.

The present research is placing special emphasis on the documentation and analysis of the traditional medical system, including the local people's special knowledge of MAC plants, their strong religious belief and their practices, against the background of their rich cultural heritage. In view of the increasing impact on the environment and its resources from outside processes, such as globalisation, mass tourism and the recent over-use and exploitation of natural plant resources, attention is also paid to the important contribution, which the local use of MAC plants provides to sustainable resources management, bio-cultural diversity conservation and community development (*cf.* Posey 1999).

In order to explore and understand the position of the traditional medical system within the overall plural medical configuration in the island, this study seeks to collect and document local medical knowledge, practice and belief in relation to the utilisation of not only traditional but also transitional and modern medical systems in the research area in a comparative way.

In line with the 'Ethnosystems Approach' of the 'Leiden School of Indigenous Knowledge Systems and Development (IKS&D)', specifically designed for the study of indigenous knowledge systems, such traditional medical knowledge systems and the underlying determinants of the related patterns of health care utilisation behaviour in the research area are studied and analysed from the local community members point of view, *i.e.* emic perspective.

In this way, this study also links up very well with the broader, successful approach of community health in the research area dealing with a number of health characteristics of population groups rather than of individuals. 'Community Health' has been defined by Sofoluwe & Bennett (1985: 3) as: *'that branch of health service which aims at achieving the highest level of physical, mental, social, moral and spiritual health for all citizens on community basis. It seeks to do this by first identifying the root causes of all prevalent diseases and health problems, and then dealing with them through a judicious utilization of governmental, private, and especially, communal resources'*.

Overall, this study is built upon rather interesting fieldwork in rural Crete, where in spite of a serious economic crisis at the time, all respondents from the two selected communities participated rather actively in the household surveys, facilitating the study and analysis of the people's knowledge, belief and practice in the complex medical configuration in this part of Crete. The comparative approach to the study of traditional, transitional and modern medical systems has been elaborated by Slikkerveer (1995) in his theoretical approach of *transcultural health care utilisation*. Thanks to the use of his advanced conceptual model and the related, rather complicated, stepwise analysis of a large number of collected quantitative data, the results have enabled the further understanding and explanation of the local process of health care utilisation, and gradually led to the formulation of some interesting theoretical, methodological and practical implications. In addition, the study also pertains to a number of policy-based recommendations for the improvement of community health care and the promotion of the

integration of traditional, transitional and modern medical systems in Crete in the near future. The following paragraphs of this introductory chapter start with an elaboration of the distinctiveness of the Island of Crete from a historical, geographical, cultural, medical and ethnobotanical point of view. After a brief description of the plural medical system, operating in the research area, the challenges, which are involved in the study of patterns of health care utilisation behaviour from a community perspective, are highlighted. Subsequently, the expected theoretical, methodological and practical implications are indicated for community health promotion in the local research area and beyond. Furthermore, specific important key-concepts, most appropriate for the present study, are defined in this section. Finally, a detailed description of the general aim and specific objectives of this research are presented, followed by an outline of the structure of the dissertation.

## **1.1 The Great Cretan Heritage of Herbal Medicine**

### **1.1.1 Crete: The Cradle of European Civilisation**

In view of its unique geographical location at the crossroads of three different continents and at a point of subduction of the African under the Eurasian tectonic plate, the surface of Crete is shaped by the extension of high mountain ranges, which enclose a number of caves, plains, basins, craters and gorges prompting scholars to define Crete as the 'Island of 100 Gorges' (*cf.* Rackham & Moody 1996). The White Mountains in the western part of the island encircle the famous Samaria Gorge, which extends over a length of 18 kilometres and forms the longest gorge of Europe, thereby offering a richly diverse flora and fauna, which attracts a large number of tourists every year. In the eastern part of Crete, the northern slopes of the Dikti Mountains surround the Lasithi Plateau, which is well known for its windmills used for irrigation. The southern slopes of the Psiloritis Mountain and the northern slopes of the Asterousia Mountains in South-Central Crete enclose the Mesara Plain, which forms the largest plain of Crete providing one of the most fertile soils of the island. Around 1.735 plant species and subspecies are found in Crete, of which approximately 159 (9.2%) are endemic to the island (*cf.* Fielding *et al.* 2005).

As a consequence of the central location of Crete at the junction of three different continents, the Cretan flora has been subject to extensive routes of plant migration, which have resulted in highly diverse types of local vegetation. Numerous plants have spread to Crete from regions as far as in Africa, Asia and the Balkan, as well as from Western Europe. The cypresses, which are growing along the forest boundary south of the White Mountains, not only form one of the earliest cultivated forests in Europe, but are also regarded to belong to the oldest trees of Europe. In the island of Crete, not less than 67 different species of wild orchids have been identified (*cf.* Delanoë & Montmollin 1999; Fielding *et al.* 2005; Dailey & Gerrard 2008).

In addition to its geographical distinctiveness and natural richness, Crete has provided a special motif in the numerous mythological accounts and legends of Ancient Greece. Crete is widely acknowledged as the birthplace of Zeus, the Father of all Greek gods, who grew up in a cave in the island. The legend has it that his Mother Rhea hid Zeus in a cave on the Psiloritis Mountain in Central Crete in an attempt to protect him from his Father Cronus. Greek mythology, however, states that the nymph Amalthea, also known as Dikte, who is at times depicted as a goat, reared Zeus in the Psychro Cave on the Dikti Mountains in Eastern Crete and nurtured him with goat milk. Mythological accounts furthermore locate the origin of Europe in Crete, thereby relating it to the tale of the Phoenician Princess Europa, whose beauty inspired the love of Zeus and prompted the principal deity to develop a plan of seduction. Hereafter, Zeus approached Europa disguised as a tame, white bull of impressive stature on a day the princess has been picking flowers at the beach together with her friends. Unlike her companions, Europa remained fearless and rather fascinated by the figure of the white bull and agreed to climb on its back, after which she has been carried away from Phoenicia to Crete. There, she gave birth to her sons Minos, Rhadamanthus and Sarpedon. The legend of Princess Europa not only links the

origin of Europe to Crete, but also marks the beginning of the rise of the Minoan civilisation of Crete, named after King Minos, son of Europa and Zeus (*cf.* Delanoë & Montmollin 1999; Fielding *et al.* 2005; Dailey & Gerrard 2008).



Illustration 1.2 The famous Snake Goddess from Knossos (circa. 1600-1550 B.C.), discovered in 1903 by the British archaeologist Arthur Evans on the site of the ‘Palace of Knossos’ in Crete.  
Source: Archaeological Museum Iraklion (2012).

In view of its strategic geographical location, Crete has been exposed to routes of migration, trading and warfare throughout history, which have crossed the island since the earliest days of human settlement in the island. The earliest population groups, which arrived in Crete, have developed the Minoan civilisation in the early centuries between 3000 B.C. and 1100 B.C. showing remarkable skills in architecture, trading, writing and artistry whereupon the Minoans have been identified as the builders of the first ‘recognized’ culture of Europe. Around 1400 B.C., an unprecedented catastrophe, which is generally ascribed to the eruption of a volcano on the neighbouring island of Thera (Santorini), destroyed the Minoan civilisation in all its material richness. It has been not until the end of the 19<sup>th</sup> century A.D. that archaeological excavations unveiled the glorious history of the Minoan culture. The discovery of the famous Minoan palaces in Knossos, Phaestus, Zakros and Malia along with other settlements and artefacts, which are nowadays well-preserved at numerous archaeological sites spread across the island as well as in archaeological museums, is shedding light on the impressive forms of architectural design and construction, elaborate pottery ware and colourful frescoes. The remains of the material culture of the Minoan civilisation include a number of well-known artefacts, such as the bull-leaping fresco found in Knossos depicting an athletic competition, which apparently attracted widespread interest among the Minoans. Also famous is the figurine of the Snake Goddess holding a snake in each of her raised hands, which has been discovered in 1903 by the British archaeologist Arthur Evans in the Temple Repositories on the site of the Palace of Knossos in Crete (*cf.* Illustration 1.2). The terracotta disk of *Phaestus*, a small disk showing pictographic

scripts reading from the centre outwards on both sides of has remained an archaeological mystery to this day (*cf.* Mackenzie 1995). Furthermore, it seems that the Minoan civilisation had developed a fairly elaborate system of knowledge, practice and belief of the use of plants in various social sectors, including medicine. For example, Opium (*Papaver somniferum*), has been already known and used among the Minoans for its pain-alleviating and sleep-inducing qualities (*cf.* Tzedakis & Martlew 1999). The significance of plants and flowers in the early Minoan culture is well represented in the famous fresco of the Prince of Lilies, which has been found in Knossos (*cf.* Illustration 1.3).

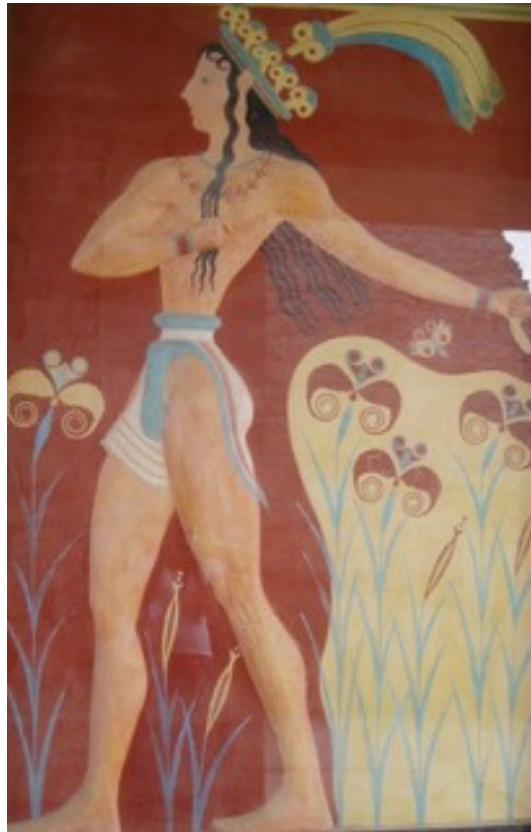


Illustration 1.3 Illustration of the famous ancient fresco ‘Prince of Lilies’ at Knossos (circa 1550 B.C.), underscoring the significance of lilies as decorative flowers in the Minoan civilisation.  
Photograph by J. Aiglsperger (2009).

Archaeological remains of later periods of time discovered in Crete are disclosing *i.a.* 12 stone tablets, which illustrate the oldest code of the Greek law covering subjects such as inheritance, marriage, divorce, sexual violence, seduction and adoption. The code of law is written in an ancient form of the Dorian dialect related to an Indo-Germanic group, which had settled in Crete from around 1100 to 69 B.C. The stone tablets have been excavated in Gortyn in South-Central Crete, the capital of Crete during the Roman occupation of Crete, which lasted from 67 B.C. until the division of the Roman Empire in 395 A.D. and has been accompanied by the introduction of Christianity to the island. Over the subsequent years, Crete came under the control of respectively the Byzantine Empire, the Arabs, the Venetians and the Turks. After joining the Republic of Greece in 1913, Crete has been temporarily occupied by the German army during the Second World War. Since the eastern Mediterranean Basin has for many centuries been regarded as the center of the civilised European world, the rich cartographic descriptions of the region had been developed by the Byzantium administration, and later elaborated by European cartographers, such as W.J. Blaeu in the 17<sup>th</sup> Century. The *Greek Cartography* reflects a great interest in Greece, enhanced by the revival of Greek culture and

Classical studies since the Renaissance (*cf.* Map 1.1). Centuries of foreign invasions and rules have left their marks on the Cretan population. To this day, they remember and celebrate their active resistance against foreign invaders and their fierce battles for independence. Stories of warfare, in which the local population has been engaged during the periods of time of oppression by the Ottoman or German rule in Crete, shed light on the bravery and heroism of local warriors in defending the island and striving for freedom.

Religious institutions, such as churches and monasteries, in the island have also played a crucial role during the resistance, whereby even local priests and abbots have been identified among the mightiest warriors of Crete. On many occasions, the religious leaders - often risking their own life - offered their monasteries to serve as refuges not only to local resistance fighters but also to the British soldiers stationed in Crete during the Second World War (*cf.* Kokonas 1991).



Map 1.1 *Candia olim Creta*, hand coloured map of Crete (formerly Candia) and surrounding islands from the Latin edition of W. J. Blaeu's '*Atlas Novus*'.  
Source: Blaeu & Blaeu (1649-1655).

Among the most famous accounts of such religious-backed resistance is the story of the abbot of the Arkadi Monastery located east of the city of Rethymnon. In 1866, Arkadi served as a refuge to 300 resistance fighters and 700 women and children during the Cretan revolt against the Ottoman rule. When the Ottoman troops attacked the gates of the monastery after three days of occupation, the abbot ordered to blow up all the barrels of gunpowder choosing to sacrifice themselves rather than surrender (*cf.* Detorakis 1994).

In general, the geographical location and historical background of Crete have favoured the development of an island population, which is torn between the extremes of isolation and exchange. In other words, the inhabitants of Crete appear to combine a persistent adherence to

traditional values and habits with a continuous exposure to foreign elements, which is nowadays reinforced by processes of globalisation, mass tourism and expanding building activities. The Cretan population continues to maintain a number of their cultural traditions, which distinguish the island from other areas in Greece and beyond. The traditions include *i.a.*: a generous hospitality, expressed in spontaneous gestures of giving, invitations to join a meal or treating someone with a drink; the firing of guns in the air during socio-religious feasts, such as Easter celebrations, baptisms or weddings; men, who gather in coffeehouses and play with their ‘*Komboloi*’, worry beads; women dressed entirely in black; and families taking a daily evening stroll.

In addition to these cultural characteristics, the population has furthermore been renowned for its traditional Cretan diet, which includes the vast consumption of olives (*Olea europaea* L. *sylvestris* Brot. or *Olea europaea* L. *oleaster* (Hoffmanns. & Link) Negodi), cereals, legumes, fruits and vegetables accompanied by a high intake of homemade olive oil, wine and liquor, known as the healthy Mediterranean Diet. As Giugliano *et al.* (2000: 9) notice: ‘*The model for the Mediterranean diet [has been] born out of these considerations regarding the inhabitants of Crete and spread, almost like wildfire, to embrace the eating habits of other countries producing olive oil*’. The Cretan diet, rich in vitamins and proteins, has reportedly also contributed to the low prevalence of cancer and heart disease, which has been found among the population of Crete during scientific research conducted by the end of the 20<sup>th</sup> century. In this respect, Lionis *et al.* (1998b: 1987) observe that: ‘*[low] morbidity and mortality rates of coronary heart disease [...] have been found in Crete*’.

### 1.1.2 MAC Plants: The Fame of Cretan Dittany (*Origanum dictamnus* L.)

Since the earliest days of human settlement, the population of Crete has heavily relied on the natural environment and its resources, which offered the basis not only for human livelihood but also for the creation of legends and myths and support during the fights of resistance.

The Cretan god Zeus, who bears a certain similarity to the Cretan god Dionysus - the son of Zeus - had evolved into the deity of love, fertility and vegetation symbolising the grass needed for the pastoralists, the fruit of wild and cultivated plants and trees as well as the spring flowers and the corn, thereby providing the essence of life of all living organisms. Interestingly, the belief in the Cretan deity Gaia, also known as ‘Mother Earth’, has been widespread since pre-Hellenic times and as a divine prophetess she has been the power behind the gods (*cf.* Mackenzie 1995).

The anthropomorphic form of the ancient Gaia is also recognized in the Snake Goddess of Crete, who provided grass for herds, caused trees to blossom and bear fruits (*cf.* Illustration 1.2). The common worship of Gaia, later also appearing as Demeter, the goddess, who has been most closely associated with plants and crops, indicates the close relationship and dependence of the early Cretan population with nature and its living plants and animals. This phenomenon is also manifest in peoples’ use of Medicinal, Aromatic and Cosmetic (MAC) plants, which sustained from the historic times up until today. As Fielding *et al.* (2005: 58) note: ‘*People have been utilising wild plants in Crete since they first arrived on the island. Wild plants are used for food, seasoning, medicine, animal fodder, bee forage, timber, fencing, roofing, shade, walking sticks, firewood, charcoal, fishing, dyeing, lighting, ornament, or as religious or superstitious emblems*’. Even more so, recently an upsurge and reorientation towards the knowledge and use of these MAC plants has emerged, not only in Crete but also around the world. According to Slikkerveer (2006), the recent movement towards a re-discovery of the usefulness of such MAC plants is the result of not only the growing disappointment of patients with treatment by modern medicines but also of the growing positive experience of successful - and often cheaper - treatment of chronic and mental disorders and allergies by natural plant-based products, which also tend to show less side effects.

Embarking on such a centuries-long history of knowledge and use of MAC plants in Crete, this study is particularly interested in the present knowledge and use of plants for medical purposes by the population in the communities in the rural areas (1.2). The operationalisation of the study of the knowledge and use of plants for medical purposes are throughout this dissertation basically referred to as plant-based or herbal medicine (1.3). In order to distinguish between the various qualities and applications of medicinal plants, this study moreover adopts the general collective concept of Medicinal, Aromatic and Cosmetic (MAC) plants, which comprises all local people's conceptualisations and references to their knowledge of a variety of plants used either internally as beverage, spice or food or externally in the form of balms, compresses or baths. For instance, common plants, such as Chamomile (*Chamomilla recutita* (L.) Rauschert / *Matricaria chamomilla* L. / *Matricaria recutita* L.), Sage (*Salvia fruticosa* Miller / *Salvia triloba* L. or *Salvia pomifera* L.) and Spearmint (*Menta longifolia* (L.) Hudson / *Mentha spicata* L.), are primarily used internally in the form of teas and infusions.

Similarly, the stems and leaves of Fennel (*Foeniculum vulgare* Miller) are widely used in the culinary traditions of the Mediterranean Region and beyond, while it is also used for medical purposes, including the treatment of conditions of the eyes and the stimulation of the nervous system. Also, several different uses are locally known of the plant Dill (*Anethum graveolens* L.), which is consumed as a spice added to local dishes or is used as a medicinal plant in cases of vomiting and abdominal pain. In Ancient Greece, fragrance has been made from the leaves of Dill and athletes used to spread the essence of dill all over their body. Furthermore, plants, such as the introduced Eucalyptus tree (*Eucalyptus globulus* Labill.) and Aloe (*Aloe vera* (L.) Burm. fil.), are cultivated for various pharmaceutical purposes, whereby the components of these plants are largely applied externally in the form of balms or compresses (cf. Psilakis & Psilakis 2003; Alibertis 2009).

The fame of the many-sided Cretan Dittany (*Origanum dictamnus* L.), a member of the *Origanum* genus, which also includes Marjoram (*Origanum majorana* L. or *Origanum microphyllum* (Benth.) Boiss.) and Oregano (*Origanum onites* L. / *Marjorana onites* (L.) Benth. or *Origanum vulgare* L.), goes back to the early times of the previously mentioned physician Hippocrates of Kos, who used this plant already as an antiseptic to treat various ailments, including digestive and respiratory disorders, such as throat ache and cough, as well as spleen problems and rheumatism. Endemic to Crete, Dittany has since antiquity moreover been used to heal wounds, treat snakebites, soothe pain, facilitate childbirth and to induce abortion.

Apart from its beneficial effect on human health highlighted by an array of ancient scholars, such as Homer, Hippocrates, Aristotle, Theophrastus, Dioscorides and Galen, Cretan Dittany has also been known to stimulate the health of animals, as they would even eat Dittany to thrive out arrows (cf. Rackham & Moody 1996). The specific qualities of Dittany as veterinary medicine have been depicted by the Flemish travel-writer Dapper in his famous engraving of a wounded Cretan goat feeding on the plant for healing purposes, which has been derived from an account by Aristotle (1.4). As Liolios *et al.* (2010: 231) indicate: 'The most interesting reference to the medicinal power of *O. dictamnus* came from Aristotle [...], who stated that when wild goats of Mount Ida (Crete) [have been] struck by poisoned arrows, they ate aerial parts of *O. dictamnus*, which had the effect of causing the arrows to leave their bodies and of healing their wounds'. In Crete, Dittany is to this day widely used in the island as a medicinal plant, whereby the leaves of the plant, which can also be chewed separately, are commonly prepared as an infusion. The additional cosmetic use of Dittany is well documented by Cunningham (1985), who notes that: '[the] juice of the dittany drives away venomous beasts, so smear some onto your body before venturing out where they live'. The various specific properties of Cretan Dittany render the reference of the concept of Medicinal, Aromatic and Cosmetic (MAC) plants to this and other useful plants most appropriate for the subject matter of this study in rural Crete (cf. Illustration 1.4).

Generally known as ‘*diktamos*’ in Greek, Dittany is occasionally referred to as ‘*stamatokhorto*’, ‘the stopping herb’, which derives its name from the Greek word ‘to stop’, ‘*stamato*’, and ‘herb’, ‘*khorto*’, most probably in reference to its ability to stop bleeding. Concurrently, Dittany is known under the name of ‘*stomakhokhorto*’, possibly an indication of its ability to treat ailments of the stomach, ‘*stomahi*’, or to refresh the mouth, ‘*stoma*’ (cf. Liolios *et al.* 2010). In addition to its healing properties, Dittany has been associated with amorous as well as dangerous qualities whereupon it has become the subject of numerous local myths and legends. The Greek name of the plant ‘*diktamos*’ has been linked to the Dikti Mountains in Eastern Crete and to the Greek word for shrub, ‘*thamnos*’.

The Dikti Mountains enclose the cave, in which the Nymph Amalthea, also known as Dikte, nurtured Zeus. In Greek mythology, Dittany derives its name from the Cretan goddess or nymph of the hunt, the mountains, the springs and the rivers, who inspired the love of King Minos but, in order to avoid his affections, threw herself into the sea. The goddess has been, however, saved by the nets of local fishermen and is hereafter named Diktynna after the Greek word for net, ‘*dikti*’, a literal reference to ‘*diktamos*’. In this way, local inhabitants have not only made use of the plant for medical purposes, but have also prayed to the goddess for assistance in childbirth and for support in the treatment of wounds inflicted by arrows. Since the plant grows wild on steep, rocky places at high altitudes, the collection of Dittany has moreover long been regarded as a test of bravery, which has been frequently taken by young men in a way to express their love to the object of their affection. As Liolios *et al.* (2010: 233) observe: ‘[...] *[It] [has been] believed that someone had to be fully in love in order to climb and gather the plant to be offered*’.



Illustration 1.4 Cretan Dittany (*Origanum dictamnus* L.) cultivated in a pot next to a drawing of the legendary goat on a wooden stem.

Source: *Lychnostatis* Museum in Hersonissos, Crete (2012).

Following a number of local legends and stories, in which the plant is used as an aphrodisiac and traditionally given to newly-wedded couples, the Cretan population generally refers to Dittany as ‘*erontas*’, presumably a reference to the Greek word for love, ‘*erotas*’. Since the Middle Ages, Dittany has furthermore been used in monasteries for the production of liqueurs, whereby the plant to this day is used in distilleries worldwide, particularly for the flavouring of vermouth (cf. Dailey & Gerrard 2008; Liolios *et al.* 2010; We Love Crete 2013; *Yia tus Kritikus tu Kosmu* 2013).

### 1.1.3 *Stin Iyia Mas*: The Local Wish of Good Health

In addition to MAC plants, the population of rural Crete makes use of an array of traditional home remedies, namely of various homemade and partly plant-based products, such as olive oil, lamb's wool or honey, which are generally available in a rural Cretan household, in a way to treat illness and promote health. Furthermore, local inhabitants engage in a number of religious and spiritual prayers and practices, which address the healing powers of particular Saints within the canon of the Greek Orthodox Church or are directed at the alleviation of illnesses caused by malignant spirits, such as the 'evil eye'. For the purposes of the present study, MAC plants, traditional home remedies as well as religious and spiritual forms of medicine are identified with the generic term of 'traditional medicine'. In rural Crete, traditional medicine is closely linked to the ancient concept of '*Yiatrosafia*', 'Medical Wisdom', as it refers to people's traditional medical knowledge with regard to the utilisation of MAC plants and traditional home remedies.

On the whole, Clark (2002: 358) notes that: '*this combination of ancient and indigenous knowledge of the healing properties of plants, is best viewed as a living system, one that has functioned over the centuries with healers engaged in a long process of learning about, remembering, forgetting, and adjusting to their cultural heritage and their physical "therapeutic landscape"*'. Since '*Yiatrosafia*', however, carries a strong historical connotation, whereby different meanings have been attached to the concept throughout history and since '*Yiatrosafia*' widely excludes religious and spiritual forms of medicine, this study refrains from using the concept as a synonym for 'traditional medicine'. Until recently, the application of traditional medicine in rural Crete involved the intermediary of traditional health care providers and included the services provided by herbalists, bone-setters, midwives, wise women and religious healers. While the practice of traditional health care provision is nowadays largely limited to the services of wise women and religious healers, traditional medicine is to a greater extent applied in the form of self-care (cf. Blum & Blum 1965; Cotton 1996).

Following the introduction of a national health care system in Greece during the 1980s and the subsequent establishment of modern health care institutions in both urban and rural areas, the population of Crete came to seek medical treatment from a variety of modern health care providers. Throughout this study, any form of medical treatment, which is offered by modern health care providers at modern health care institutions, is referred to as 'modern medicine' (1.5). Overall, practices of modern medicine are rooted in the knowledge taught at Medical Schools and are herewith distinguished from the examples of traditional medicine described previously. The application of modern medicine generally involves the intermediary of a modern health care provider and relates to the services provided by physicians or medical doctors, nurses and midwives (1.6). Recent socio-economic developments in Greece have moreover stimulated the growing use of pharmaceutical medicines, namely of '*Farmaka*', which are purchased from community pharmacies. In view of its commercial connotations, which involve the economic interests of pharmaceutical companies, pharmacy employees and clients, the system of pharmaceutical medicines holds a somewhat intermediary position between traditional and modern medicine and is identified as components of the so-called 'transitional medical system' within the present study.

As described by Slikkerveer (1982: 1863): '*"Pharmaceutical medicine" represents a transition from traditional to [modern] medicine in the on-going process of change in medical belief and practice [...]*'. Plant-based medicine, which is cultivated for sale and can be freely purchased from local pharmacies or herbal shops, is identified as a component of the transitional medical system. In order to differentiate between the various types of medicines available to the client, this study moreover distinguishes between medicines available on prescription, hereafter referred to as 'prescribed' or 'prescription' medicines, and medicines available without a prescription, hereafter identified as 'non-prescribed', 'non-prescription' or 'Over-the-Counter (OTC)' medicines. In general, the application of pharmaceutical medicines involves the intermediary of the staff employed at the community pharmacy, which offers clients the service

of filling prescriptions and selling medicines, as well as the assistance of the sales personnel at local supermarkets and herbal shops. To some extent, the use of medicines, particularly of medicines, which had been stored at home or have been received from a fellow community member, however, tend to encourage self-care. In view of multiple facets of medicine available to the population of rural Crete, local inhabitants generally develop transcultural patterns of health care utilisation, which are based on the patients' contact with the traditional, transitional and modern medical system.

While previous research conducted on patterns of health care utilisation behaviour in industrialised societies focussed mainly on the single medical system offering modern forms of health care, advanced studies in developing countries had to address the situation of plural medical systems, including modern and traditional forms of medicine at once. In order to study and analyse such complex medical configurations, Leslie (1976) introduced the concept of *medical pluralism* in his pioneering work in Asia. Later, Slikkerveer (1995) has been the first medical anthropologist, who operationalised the concept of medical pluralism in East Africa with his transcultural approach towards the multiple use of different traditional, transitional and modern medical systems in Ethiopia. The comparable complexity and distinctiveness of the different traditional, transitional and modern medical systems in the research area in Crete necessitates a similar transcultural approach, in which an answer is sought on the key-question: *'What kind of patients use what kind of medical systems for what kind of disorders?'*

The present study focuses on the use of the plural medical system by a population group living in the neighbouring communities of Pírgos and Práitoria in South-Central Crete, with special attention to the related peoples' indigenous knowledge of MAC plants. Both research communities are part of the administration of the Municipality of Arkhanes-Asterousia, which belongs to the Prefecture of Iraklion. In view of its location on the northern slopes of the Asterousia Mountains and towards the eastern edge of the fertile Mesara, largely outside the scope of mass tourism, the research area offers a favourable and rather unique environment in which local systems of medical knowledge, practice and belief, as well as the patterns of health care utilisation behaviour can be studied and analysed.

Research conducted in this part of rural Crete on patterns of health care utilisation also benefits from the availability of traditional, transitional and modern health care institutions and as such enables in-depth research of local peoples' transcultural behavioural patterns, which are reported within the realm of medical pluralism in Crete. Furthermore, the particular situation in the research area, which forms part of the wider context of an island, enables the study of the follow-up contacts of patients with the plural medical system, as patients are mostly Cretan and tend to seek treatment within the confinement of the island. The advantages of this kind of research have been documented and explored by *i.a.* Arnold (1986), Lionis *et al.* (1993; 1996; 1997; 2005) and Anastasiou *et al.* (2006).

## **1.2 The Challenge of the Study of Medical Pluralism**

### **1.2.1 The New Paradigm of Indigenous Knowledge Systems (IKS)**

In general, the majority of communities worldwide have adapted to the challenges of illness by creating an extensive system of medical knowledge and by developing patterns of behaviour, which aim at the treatment and prevention of disease, as well as at the promotion of health. In order to document the local system of medical knowledge shared by the population of rural Crete, the present study is concerned with a specific system of traditional or indigenous knowledge. 'Indigenous Knowledge' has been defined by Warren, Slikkerveer & Brokensha (1995: xv) as: *'the local knowledge that is unique to a given culture or society [and] contrasts with the international knowledge system which is generated through the global network of universities and research institutes'*. Focussing on Indigenous Knowledge Systems (IKS), this research distinguishes between indigenous, traditional or local systems of knowledge and

international or modern systems of knowledge, whereby the latter have often been identified as scientific as opposed to traditional knowledge systems. Nevertheless, this study follows a line of reasoning, in which practices of science, coupled with belief and magic, form a universal characteristic of all human societies whereupon both indigenous and international knowledge systems can be considered scientific. Local classifications of illnesses or MAC plants, for example, are based on mutually understood concepts and for this reason qualify as scientific doctrines (cf. Slikkerveer 1995; Molenaar 1999).

As Slikkerveer (1995: 514) argues: *‘The implication of such position pertains to the conclusion that both [international] and indigenous science are the result of the same general, intellectual process of creating order out of disorder’*. Primarily transferred orally from generation to generation, IKS are largely rooted in the experiences, which people gain from interaction with the natural, social and spiritual environment of their community. In general, IKS involve an intangible - invisible - socio-cultural aspect of knowledge, which relates to the particular worldview or cosmovision of a specific population group. As Slikkerveer (1999b: 171) highlights: *‘Cosmovision refers specifically to the way in which the members of a particular culture perceive their world, cosmos or universe’*. In this way, the cosmovision guides the relationships, which people have with the human, the natural and the spiritual world. As the basis of local-level decision-making in various sectors of the society, including medicine, IKS have been identified as dynamic, continuous and adaptive systems of knowledge, practice and belief. Besides, IKS advocate patterns of behaviour, which are culturally adaptable to local settings and involve sustainable ways of human interaction with the natural, social and spiritual environment (cf. Slikkerveer 1997; 1998; 1999; 2003).

Since the second half of the 20<sup>th</sup> century, scholarly interest in the study of IKS in relation to various sectors of rural societies, including agriculture, natural resources management and medicine, has increased substantially. Academic research, which has been conducted across a variety of disciplines, including anthropology, ecology and medicine, has recently focussed on local systems of knowledge, practice and belief in view of the possible contribution IKS provide to community development, bio-cultural diversity conservation and health care delivery improvement. Research on IKS has been carried out among rural communities in primarily developing countries, particularly within the geographical regions of: Southeast Asia (cf. Agung 2005; Leurs 2010; Djen Amar 2010; Ambaretnani 2012); and East Africa (cf. Buschkens & Slikkerveer 1982; Slikkerveer 1982; Slikkerveer 1990; Ibui 2007; Chirangi 2013).

In this respect, studies of IKS have to some extent underestimated the presence of indigenous systems of knowledge in mainly remote areas of industrialised countries, such as Greece. As Kain Hart (1992: 7) claims: *‘We can say that, in some respects, Christianity in Greece is an indigenous tradition. The imagery and symbolism of its rituals are, from the vantage point of the village, intimately familiar: drawn, it would seem, from the local landscape. This immediacy is part of what gives substance to the equation of national and religious identity in Greece’*. The current economic situation in Greece, which raises the question of new strategies towards community development, furthermore adds significance to an actualised study of IKS among rural population groups. The present research seeks to extend the focus of IKS geographically and to analyse local systems of knowledge, practice and belief among a population group living in rural Crete, where IKS have provided a sound basis for the formation of a traditional medical system. In order to gather information on the local systems of medical knowledge, practice and belief, this study embarks on a detailed literature survey and subsequently the application of a number of qualitative research methods in a way to conduct in-depth interviews in the selected research area of South-Central Crete. In particular, the present study adopts the specific ‘Leiden Ethnosystems Approach’, which has specially been designed for the analysis of local systems of knowledge, practice and belief from an insider’s rather than from an outsider’s perspective. In this way, substantial data have been collected on local classifications of MAC plants and home remedies and related illnesses as well as on religious and spiritual prayers and practices, thereby illustrating the rich content of IKS available in this part of Crete.

### 1.2.2 The Concept of Medical Pluralism in Rural Crete

The patterns of behaviour shown by communities in response to the challenges of illness, as well as to individual and social problems induced by events of illness have contributed to the formation of particular medical systems. The present research adopts the definition of a 'medical system', which has been proposed by Dunn (1976: 135) as: *'the pattern of social institutions and cultural traditions that evolves from deliberate behaviour to enhance health, whether or not the outcome of particular items of behaviour is ill health'*. Since medical systems are generally as complex as the cultural and social systems of the community involved, most population groups employ more than one medical system at the time.

Following the worldwide advance of modern and transitional forms of medicine over the past decades, communities have gained access to modern health care facilities as well as to pharmaceutical medicines, and have come to deal with different types of medicine and health care provision (cf. Landy 1977). As Slikkerveer (1990: 13) points out: *'[...] [The] co-existence and utilisation of a wide range of traditional and modern healing systems in many parts of Africa, Asia and Latin America has generally been regarded as a typical phenomenon in the developing world'*. Nevertheless, the rural population of Crete has similarly developed a number of socio-cultural and biological strategies over time in an attempt to deal with illness and has hereby developed a plural medical system, which is subdivided into traditional, transitional and modern medical systems.

Local patterns of health care utilisation behaviour shown by the inhabitants of rural Crete involve a variety of contacts between individuals and functionaries of the plural medical system and range from the self-use of plant-based medicine to consultation with pharmacists and medical doctors. In general, considerable research has been devoted to the study of individual medical systems available in rural Crete, namely to a documentation of: the traditional medical system (cf. Legel 1998; Molenaar 1999; Palstra 2003; Dijkstra 2005; De Vries 2007); the transitional medical system (cf. Hanepen 1997; Lionis & Philalithis 2008; Kontarakis *et al.* 2011); or the modern medical system (cf. Mossialos 1997).

The present study, however, dissociates itself from a single focus on one specific medical system and hereby advocates the concept of medical pluralism in order to represent a realistic picture of all medical systems operating in the research area of rural Crete. The concept of medical pluralism has been successfully implemented in various geographical settings and hereby offers a rather unique approach to the study of transcultural patterns of health care utilisation behaviour in rural Crete. In other words, the concept of transcultural health care utilisation, *i.e.* the use of different medical systems for the same illness or disorder, which has initially been introduced in the Horn of Africa by Slikkerveer (1990), has been operationalised and extended in order to meet the requirements of the rather complex plural medical configuration in the selected research area of rural Crete. Consequently, this study also provides a complementary follow-up to the classical study on health and healing in rural Greece by Blum & Blum (1967), which focused on the role of the traditional medical system in the health care of three rural communities in mainland Greece.

Moreover, the present research embarks on the results of previous studies carried out on health care utilisation in Crete. In this way, this research compares specific aspects of local systems of medical knowledge and health care delivery, which have been identified during previous research, with the information and results gained from the present study. In order to adequately identify and analyse the different medical systems available to a specific population group living in rural Crete, this research departed on a pilot survey, which eventually has shed light on the co-existence of traditional, transitional and modern medical systems.

Subsequently, data have been collected on a number of psycho-social factors, namely on factors related to the people's knowledge and opinion of each medical system. In the same fashion, information has been gathered on several institutional factors, which documented people's knowledge and opinion of the health care institutions available in the research area. In this way, an analysis of psycho-social and institutional factors allowed for an overall assessment of the rather unique characteristics of the plural medical system operating in rural Crete.

### 1.2.3 The Importance of the Voice of the Community

In view of the particular characteristics of the plural medical configuration in rural Crete, local inhabitants tend to use different forms of traditional, transitional and modern medicine and health care in a way to treat illness and promote health. As mentioned above, this study adopts the definition of 'Community Health' as defined by Sofoluwe & Bennett (1985: 3) to encompass: *'that branch of health service which aims at achieving the highest level of physical, mental, social, moral and spiritual health for all citizens on community basis'*.

While medicine and health care both aim at the restoration of health, the present research moreover defines 'Medicine' as all individual practices concerned with the diagnosis, alleviation, treatment and prevention of disease, as well as with the maintenance and promotion of health. 'Disease Prevention' relates to measures adopted in a way to prevent the occurrence of diseases such as the reduction of risk factors, and to arrest the progress of the condition and to reduce its consequences. In comparison, 'Health Promotion' refers to any practice, which is beneficial to human health and enables people to increase control over their health (*cf.* Nutbeam 1998). Although a substantial amount of particularly traditional forms of medicine are applied in a way to enhance disease prevention and health promotion, the present research focuses mainly on medicine in the context of the treatment of disease and highlights practices of disease prevention and health promotion only when describing particular forms of medicine, such as plants, in greater detail. On the other hand, 'health care' refers to the maintenance and restoration of health on a rather organisational level that is to the provision of medical care by trained professionals or related institutions to individuals or a community.

In the aftermath of the Second World War, scholarly interest in the development of international strategies towards the improvement of health care delivery in primarily developing countries increased considerably. In the course of time, researchers engaged in the study of what has become known in the medical anthropological literature as patterns of 'Health Care Utilisation Behaviour', 'Health Care Seeking Behaviour', 'Health-related Behaviour' or 'Illness Behaviour' (*cf.* Foster & Anderson 1978; Bannerman *et al.* 1983; Slikkerveer 1990; Agung 2005; Ibui 2007; Leurs 2010; Djen Amar 2010; Ambaretnani 2012; WHO 2012). As Slikkerveer (1990: 2) notes: *'Health behaviour, illness behaviour and the utilisation of health care as significant elements in this process have become main issues in the study of medicine, culture, and community'*.

More explicitly, 'health behaviour', refers to actions, which people undertake in the absence of illness in order to determine or strengthen one's health status and hereby refer to preventive and health promoting activities, as well as to the consultation of administrative services. Although examples of health behaviour are highlighted throughout this research when specific forms of medicine are described in greater detail, the present study focuses primarily on people's behaviour during events of illness, namely on patterns of illness and health care utilisation behaviour. In this respect, the present research distinguishes between the concepts of 'illness' and 'disease', which both refer to a state of ill-health, namely a disturbance of the normal functioning of the biological organism (1.7). 'Illness' refers to the subjective psycho-social experience of ill-health by the individual in the context of the socio-cultural meaning assigned to the state of ill-health by the wider community and relates to the steps taken by each individual in an attempt to treat illness.

In general, 'illness' forms a social entity, which incorporates the social responsibility and obligation of each individual to stay healthy and to cope with episodes of ill-health by making temporary personal and social adjustments.

Among a number of communities, events of illness are reportedly accompanied by a loss of grace, as well as by feelings of shame and pity, which are rooted in the inability of the individual to fulfil the social responsibility of being healthy. To some extent, illness has been interpreted as a state of suffering, which is stimulated by the commitment of a sin and thus often involves harmful methods of treatment. On the contrary, Helman (1981: 548) indicates that: '*[the] disease model cannot deal with such personal, cultural and social factors in ill-health, which are better viewed from the perspective of illness*'. 'Disease' refers to the technical, objective diagnosis of ill-health, namely to the bio-psychological meaning assigned to the state of ill-health by official doctrines, whereby symptoms are rather universal and diseases are similar regardless of the individual, culture or group, in which they occur. As noticed by Helman (1981: 548): '*[...] [Diseases] are seen as abstract "things" or independent entities which have specific properties and a recurring identity in whichever setting they appear*'.

In this way, 'disease' harbours a medical entity, which is concerned with the disorders of structures or functions of body organs or systems and hereby incorporates humanitarian, economic, social and psychological complexities (1.8). In view of the distinction made between 'illness' and 'disease', patterns of illness and health care utilisation behaviour are primarily based on the individual experience and perception as well as the social response to illness. In other words, health care utilisation behaviour involves any action undertaken by the individual in understanding with the wider community, which aims at the restoration of health (*cf.* Suchman 1963; Foster & Anderson 1978; Kleinman 1978; 1980; Helman 1981; Foster 1983; Slikkerveer 1990) (1.9).

On the whole, a substantial number of studies conducted on patterns of health care utilisation behaviour in rural Crete have embarked on institution-based research, thereby publishing official data on certain diseases or highlighting shortcomings related to the knowledge of physicians, the availability of technical equipment or the organisational structure of the national health care system at large (*cf.* Davaki & Mossialos 2005; Dijkstra 2005; Lionis *et al.* 2005; Symvoulakis *et al.* 2006; Lionis *et al.* 2009). In detail, a recent assessment of risk factors for ischemic heart disease among the population of rural Crete, for example, has ignored the assumingly beneficial influence of local dietary habits, including the consumption of aromatic plants, and the positive effect of social networks on the health of the local population. As Lionis *et al.* (2010: 2) notice: '*Although the link between psychosocial factors and [cardiovascular diseases] has increased in the literature in recent years, this subject still seems to be neglected in Greece*'. In spite of the widespread occurrence of risk factors, such as smoking, alcohol intake and obesity, a relatively low prevalence of cardiovascular diseases has been recorded for the rural population of Crete. To some extent, these findings can be related to a number of invisible factors, particularly cultural and traditional aspects of everyday life, which may positively contribute to the morbidity profile of the inhabitants (*cf.* Karalis *et al.* 2007; Lionis *et al.* 2010).

In an attempt to overcome such shortcomings, the present study seeks to analyse patterns of health care utilisation behaviour among a population group living in rural Crete from the perspective of the local community, adopting an approach, which has to this day been rather limited (*cf.* Slikkerveer 1990). According to Slikkerveer (1990: 27): '*Health care became increasingly intertwined with socio-economic and political considerations, whereby emphasis came to be placed on an integrated approach to development from within the community itself [...]*'. In particular, this research emphasises the subjective interpretation as well as the social response to events of illness experienced by the local inhabitants and undertakes a detailed analysis of the forms of treatment sought. In addition to incorporating any form of contact between patients and the different medical systems available in the research area, the present analysis distinguishes between internal and external forms of treatment. Internal forms of treatment refer to practices of 'self-care', which are defined as actions, which patients generally

initiate themselves (*cf.* Slikkerveer 1990). Furthermore, internal care incorporates any form of contact between patients and non-professional health care providers, such as family members or friends, which has been established in a way to receive treatment.

In Crete, practices of internal care include the use of plant-based medicine, traditional home remedies, religious and spiritual medicine, as well as the use of pharmaceutical medicines, which have been obtained from a non-professional health care provider. In contrast, external forms of treatment refer to the practices of individuals, who, as noted by Slikkerveer (1990: 225): *‘actually left their homes and sought some form of external medical care in one of the available medical systems’*.

External care relates to the intermediary of a professional health care provider, who has been defined by Eisenberg *et al.* (1993: 2) as: *‘someone who provides care or gives advice and is paid for his or her services’*. The application of the concept of external care in rural Crete involves the consultation of patients with a representative of the traditional, transitional or modern medical system (*cf.* Buschkens 1990; Slikkerveer 1990; Kristoffersen *et al.* 2008). Therefore, this research links up with a number of studies, which have analysed patterns of health care utilisation behaviour shown in rural Crete from a community perspective (*cf.* Blum & Blum 1965; Visser 1986; Neus 1989; Smak Gregoor & Zwiep 1990; Van Beelen 1990; Van der Hoeven 1992; Van Bommel 1993; Van de Kerk 1993; Hanepen 1997; Hagoort 1998; Legel 1998; Molenaar 1999; Bouma 2000; Palstra 2003; De Vries 2007).

Nevertheless, these community-based research approaches have been limited to a certain extent, as they have mainly focussed on the prevalence of certain types of diseases among the rural population, on the patients’ contact with a single medical system or on forms of external care. On several occasions, the community-based studies have moreover been confined to a relatively low number of respondents. The present study, however, extends its community-based research approach to include an indigenous classification of illnesses and to analyse the transcultural patterns of behaviour, which incorporate all forms of treatment sought from the plural medical system in an attempt to treat a particular illness episode. Accordingly, the concept of disease is throughout this study used for the purpose of the objective explanation of medical disorders in officially recognised terms. Since this research analyses the patterns of behaviour of a total of 656 respondents, it generates a substantial amount of data to support its findings.

In order to collect information on local patterns of health care utilisation behaviour in rural Crete from all households involved, this study implements two extensive, quantitative household surveys. Prior to the execution of the household surveys data have been collected during the pilot studies on a number of factors, which have been identified as possible significant determinants of people’s health care utilisation behaviour. The identification of factors followed the specifications of the multivariate model of transcultural health care utilisation, which has successfully been applied to earlier analyses of local patterns of health care utilisation behaviour from a community perspective in other research settings and has been adapted to the present study (*cf.* Slikkerveer 1990; Hanepen 1997; Legel 1998; Molenaar 1999; Agung 2005; Dijkstra 2005; De Vries 2007; Ibui 2007; Leurs 2010; Djen Amar 2010; Ambaretnani 2012, Chirangi 2013).

The particular factors, which have been identified include: socio-demographic characteristics of all respondents involved; the psycho-social characteristics, namely the knowledge and opinion of the household members in relation to the plural medical system; the economic situation of each household; the main illness experienced by all respondents during the 12 months preceding the surveys; the knowledge and opinion of each household member in relation to the institutions associated with each medical system; the external influence of the current economic situation in Greece on patterns of health care utilisation behaviour; as well as the particular transcultural patterns of health care utilisation in terms of the patients’ contact with the plural medical system available in rural Crete, which have been inserted as dependent variables into the multivariate model. Eventually, the results of the household surveys allowed for a classification of respondents as: ‘non-patients’, namely individuals, who have not experienced any illness over a

specific period of time; ‘non-action patients’ referring to individuals, who have experienced an illness over a specific period of time but refrained from seeking any form of treatment; and ‘action patients’ or ‘patients’, namely individuals, who have experienced an illness over a specific period of time and have contacted the plural medical system in order to seek treatment. Information has been primarily gathered on the group of ‘patients’, as they formed the basis for the subsequent statistical analysis of patterns of health care utilisation behaviour among the population group living in rural Crete.

### **1.3 A New Approach to Community Health Promotion**

#### **1.3.1 The Significance of the Study of MAC Plants in Crete**

In view of the analysis of patterns of health care utilisation behaviour from a community perspective, the present study sheds light on the local traditions of plant-based medicine, which have been applied by the inhabitants of Crete since the earliest days of human settlement in a way to treat illness and to promote health. The biological diversity of the natural environment has stimulated the development of practices of the application of MAC plants, which reflect the cultural diversity of the community involved. As Leurs (2010: 17) highlights: *‘A strong, undeniable relationship exists between the biological and cultural diversity which is constantly changed keeping pace with the interrelationships among and between them, continuously re-evaluating the parameters of human existence’*. The concept of bio-cultural diversity has recently received increased scholarly attention, not at least due to the alarming loss of bio-cultural diversity worldwide, which has been caused by processes of environmental degradation and globalisation and poses a challenge to the survival of humankind. By consequence, there is now a growing awareness of the need for designing strategies to advance bio-cultural diversity conservation. The application of plant-based medicine generally involves processes of collection, cultivation and classification as well as documentation of knowledge of locally available MAC plants. Furthermore, the often well-contemplated use of herbal medicine in itself advocates local patterns of bio-cultural diversity conservation. The inhabitants of rural communities generally recognise the link between the use of MAC plants and bio-cultural diversity conservation within the context of the sustainable management and use of the natural, social and spiritual environment of the community involved (*cf.* Bodeker 1999; Posey 1999; Agung 2005; Leurs 2010).

In this way, the present study offers a detailed description of the systems of knowledge, practice and belief in relation to the application of herbal medicine, which have been established among a population group living in rural Crete, and hereby contributes to the conservation of bio-cultural diversity in the research area. Nevertheless, the contribution, which this research provides to the conservation of bio-cultural resources in the area of South-Central Crete, can only be understood within the context of the natural, social and spiritual environment of the two research communities. The present analysis contributes to the conservation of bio-cultural diversity in the research area by means of identifying certain types of plants, which are locally used for medical purposes, as well as various local practices associated with the use of MAC plants. The collection of information on forms of plant-based medicine enables this study to gain continuous access to the bio-cultural resources available in rural Crete. In addition to illustrating the richness of biological and cultural resources available in the research area, the present study moreover highlights external threats of degradation of such diversity. Practices of inconsiderate garbage disposal, overgrazing and over-use of plant resources, as well as processes of mass tourism and globalisation coupled with a growing economic dependence on outside incentives, which has been brought forward by the current economic developments in Greece at large, have a rather deteriorating effect on both the bio-cultural diversity and the application of plant-based medicine in rural Crete. The collection of data on locally available MAC plants as well as practices of application of herbal medicine also provides further insight into examples of

sustainable resource management and bio-cultural diversity conservation. Since the early days of human settlement in the island, the population of Crete has made substantial use of plant-based medicine, where the natural resources have been used in a rather sustainable way to make them also available to future generations. Through the study of these local practices today, the present study may find possible locally-inspired solutions for reducing the threat of loss of the rich bio-cultural diversity in rural Crete.

Apart from contributing to the conservation of bio-cultural diversity in itself and from offering possible incentives to practices of conservation at large, this research moreover highlights the contribution, which plant-based medicine provides to the overall promotion of community health. In general, herbal medicine is renowned for its embeddedness in the natural, social and spiritual environment of rural communities as well as for its sustainability, local availability, low price, less complicated production and its relative safety. The use of MAC plants has recently experienced a gradual revival among population groups, which rely primarily on traditional forms of medicine, as well as among communities, of which the health care system is mainly based on modern forms of medicine. In this way, plant-based medicine has recently become a vivid component of Complementary and Alternative Medicine (CAM), encompassing a broad spectrum of treatment practices outside the scope of modern medicine. Although these practices are not unique to a given culture and cannot be identified as traditional medicine, they have recently spread rapidly across societies offering treatment methods complementary or alternative to mainstream medical practices (*cf.* Slikkerveer 2003; 2006; WHO 2012) (1.10). As Slikkerveer (2006: 8) observes: *'For some people, the use of natural products seems to fill in the gap of modern science regarding its inability to explain the cosmology of the balanced, holistic links between body and mind, the natural world and the spiritual world, and eventually between humans and their universe'*. The present study contributes to the promotion of community health by means of supporting the revival of plant-based medicine in rural Crete as well as by means of offering examples of CAM to population groups living elsewhere in Crete, in Greece and beyond.

To a certain extent, this study moreover advocates community health by means of providing incentives to the development of pharmaceutical medicines, for which there is a growing worldwide demand. Recent pharmaceutical research has focussed on the experimental evaluation of plant-based medicines, whereby a considerable number of medicines have been developed on the basis of local systems of medical knowledge and related practices of plant-use. At the same time, however, a number of studies have raised concern about the protection of natural resources and the human rights from exploitation by outsiders (*cf.* Holmstedt & Bruhn 1995; Cotton 1996; Slikkerveer 2006). Since the present research highlights forms of plant-based medicine within the context of a particular natural, social and spiritual environment, as well as in relation to the plural medical system available in the research area, it strengthens the importance of evaluating plants within the wider community involved. In general, it is only on the basis of a community-oriented research approach that the possible significance of MAC plants and their pharmaceutical potential can be identified and that community health can be promoted.

### **1.3.2 Advanced Research in Patterns of Health and Illness Behaviour**

Apart from its rather practical contribution provided to the promotion of community health, this study advocates an advanced research approach to the analysis of patterns of health care utilisation behaviour. For this reason, the present research links up with the scientific interest of, particularly medical anthropological scholars in the analysis of processes of illness behaviour, which has increased since the second half of the 20<sup>th</sup> century. The early scholarly interest in patterns of illness behaviour placed increased emphasis on locally available traditional medical systems. As Blum & Blum (1965: 159) conclude: *'[Modern medicine] is a drab, humdrum tradesman's work that lies completely outside the dramatic, exiting, intimate sphere of religion and magic'*. Following this early attention for the study of traditional medical systems, this

research adopts the approach of medical pluralism, which has later been advocated by various researchers as a new and more realistic strategy towards the study of patterns of health care utilisation behaviour. Since the research area of rural Crete is characterised by the co-existence of a traditional, transitional and modern medical system, the advantages of applying the concept of medical pluralism are evident. By consequence, it is only on the basis of a comparative and pluralistic research approach that a rather realistic assessment of local patterns of health care utilisation behaviour can be made, which includes practices of self-care as well as contact with the ‘unofficial’ traditional medical system.

Since medical pluralism also provides a sound basis for comparative studies of medical systems worldwide, the present research embodies a source of information, which can be used to compare medical systems not only in Crete but also elsewhere around the globe. In this way, the pluralistic approach to the study of patterns of health care utilisation behaviour moreover counteracts the rather artificial separation between traditional and modern medical systems, which often characterises the medical environment of communities. The early scholarly attention for the study of traditional medical systems has created a dichotomy between communities, which rely primarily on traditional medical systems, and population groups, which contact predominantly modern medical systems (*cf.* Kohn & White 1976; Leslie 1976; Landy 1977; Slikkerveer 1990; 2006; Leurs 2010). In this respect, Slikkerveer (1990: 17) notices: *‘The need to define the plural character of medical systems encompassing a wider variety of knowledge, perceptions, practices and behaviour related to health and disease has called for a holistic approach to the study of the socio-cultural context of both modern and alternative medical systems [...]’*. By positioning the indigenous knowledge of MAC plants in relation to the utilisation of the plural medical system within the perspective of integrated community health development in Crete, the present study seeks to provide a contribution to closing the theoretical gap between traditional and modern medical systems.

The selection of the research methodology, which enables a detailed study of behavioural patterns and multiple configurations of medicine, adds significance to the theoretical as well as methodological implications of this research. The ‘Leiden Ethnosystems Approach’, which has been selected as an adequate instrument to study the local systems of knowledge, practice and belief from a community perspective, has so far not been applied in research of the plural medical system in rural Crete. Similarly, the multivariate model of transcultural health care utilisation has been adapted to the analysis in order to study the local patterns of health care utilisation in an adequate way. While the conceptual model has successfully been selected and applied to various research areas and analyses of behavioural patterns in different developing countries, namely in relation to different aspects of community life, the application of the analytical multivariate model of transcultural health care utilisation to the present research area is rather new for this part of the Mediterranean Region (*cf.* Slikkerveer 1990; Hanepen 1997; Legel 1998; Molenaar 1999; Agung 2005; Dijkstra 2005; De Vries 2007; Ibui 2007; Leurs 2010; Djen Amar 2010; Ambaretnani 2012, Chirangi 2013). The selection and use of the analytical multivariate model of transcultural health care utilisation in the study of patterns of illness behaviour in rural Crete also enables the present study to highlight the theoretical and methodological implications of the research findings. The factors, which have been identified and inserted as variables into the multivariate model, reflect the particularities of the local population whereupon the model has come to provide a sound basis for research conducted on patterns of health care utilisation behaviour in rural Crete. The successful adaptation of the multivariate model of transcultural health care utilisation to the present research area further supports the general applicability of the model to different geographical and cultural settings elsewhere around the globe.

On the basis of the conceptual model, the collected data have been analysed by means of selected statistical methods, whereby a number of factors, which have generally been described as determinants of the health care utilisation behaviour of the local population, could be identified and further substantiated. Consequently, the statistical results gained from this study

are also used to indicate possible shortcomings within the overall system of health care delivery. Although the present research focuses on the rural population of South-Central Crete, any recommendation for the improvement of strategies of health care delivery, which is formulated on the basis of the results, may also have implications for the rural population of Crete and Greece as a whole. As Lionis *et al.* (2009: 4) show: *‘An equally significant issue is the application of scientific models to regulate health care use, eliminating waste, by supporting better utilisation and allocation of resources within a national strategic health care plan’*. On the whole, this research may also provide an incentive for future research to be conducted on patterns of health care utilisation behaviour in plural medical systems elsewhere in Crete or in Greece.

### 1.3.3 From Primary Health Care to Community Health Development

On the basis of the analytical model, as well as the specific research methods and techniques, a rather realistic description and analysis of local behavioural patterns of patients are presented, which form the basis for policy-oriented recommendations for the improvement of local health care delivery. In view of international policies, which have been designed to improve health care delivery on the community level and within the context of plural medical systems, the present study embarks on the concept of Primary Health Care (PHC). PHC has been defined by WHO (1978: 1) as: *‘essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination’*. The strategy for PHC has been initiated at the International Conference on Primary Health Care held in Alma Ata in 1978 and convened by the World Health Organisation (WHO) and the United Nations International Children’s Emergency Fund (UNICEF). The conference marked the beginning of a new approach to health planning, particularly with regard to: the redefinition of the concept of PHC. Interestingly, the concept of PHC provides equal access to modern health care facilities worldwide; and the rather crucial position of traditional health care providers and traditional birth attendants in the context of health care delivery.

WHO subsequently adopted the concept of PHC in 1981 in its aim to design a strategy for achieving an acceptable universal level of health by the year 2000, which became known as: *‘Health for All by the Year 2000’*. Following the principles of PHC, WHO hereby adopted a more sustainable and participatory approach designed to incorporate both traditional and modern forms of medicine and to involve local communities in strategies of health care delivery and the development process at large (*cf.* WHO 1978; Bannerman *et al.* 1983; Slikkerveer 2003; 2006; WHO 2008b).

Recently, there has been a general recognition that equal access to health care services around the world has not yet been secured, a notion reminiscent of the driving force behind the Alma Ata declaration of 1978, whereupon the concept of PHC has received renewed attention (*cf.* WHO 2008b). WHO (2013c) currently advocates an achievement of better health for all on the basis of securing equal access to PHC facilities, which involves:

1. ‘Reducing exclusion and social disparities in health (universal coverage reforms);
2. Organising health services around people’s needs and expectations (service delivery reforms);
3. Integrating health into all sectors (public policy reforms);
4. Pursuing collaborative models of policy dialogue (leadership reforms); and
5. Increasing stakeholder participation’.

In Greece, the delivery of PHC has been hindered by differences in the availability of medical facilities and the quality of services provided between urban and rural areas, as well as between public and private health care providers. In this way, rural population groups are largely

confronted with a virtual absence of services directed at disease prevention and health promotion, as well as with a shortage of primary health care staff and equipment, which have moreover amounted to a low level of continuity and integration of care. Due to this fragmentation and discontinuity of services, strategies of primary health care delivery, particularly to rural population groups, have been rather limited, whereby remote areas have remained under-served (cf. Lionis *et al.* 2009; Sbarouni *et al.* 2012). As Lionis *et al.* (2009: 4) argue: *‘Continuity of care through the management of common episodes of care by the same health team over time has remained an unmet need within primary care delivery in Greece’*. Consequently, *‘national health planning has not been carried out in the context of evidence-based practice or a comprehensive health needs assessment’* (ibid.: 6). In other words, as Oikonomou & Mariolis (2010: 457) point out: *‘Greece has not yet fully established an integrated, consistent, equitable, comprehensive, and patient-centred primary health care [system], free at the point of use’*. In this respect, recent policies towards advancing PHC in Greece have urged the establishment of an efficient referral system, the identification of health care priorities, the allocation of resources in a cost-effective way, as well as the coordination of care between health care and social care providers within the patient’s environment (cf. Lionis *et al.* 2009). Souliotis & Lionis (2004: 647) argue that integrated PHC in Greece needs to focus on the following principles: *‘(a) Continuity of care, allowing for the management of acute and chronic health problems by the same physician or health team across time; (b) Integrated and coordinated care that is management of the most common diseases and health problems as well as major risk factors, in the patient’s own social, cultural, and psychological environment, through the intersectional collaboration meeting the patient’s care needs at local level; (c) Patient, and their families, focused care coordinated with appropriate referral and movement or patients through the system’*.

The present research, which adopts a community-oriented approach to the study of patterns of health care utilisation behaviour showed by a particular population group living in rural Crete, embarks on the notion to strengthen PHC in the area, but rather seeks to promote the provision of community health care. This study identifies possible shortcomings within the local system of health care delivery from a community perspective and shows considerable potential for eliminating social disparities, while shedding light on the needs and expectations of the people in the communities involved. The present analysis of transcultural patterns of health care utilisation behaviour illustrates particular patterns of over- and under-utilisation of medical systems available in rural Crete. Likewise, this research allows for a detailed assessment of indigenous knowledge of MAC plants and practices of self-care, which include the use of traditional, plant-based medicine as well as the use of non-prescribed medicines. The study also deepens the understanding of the effects and organisation of the plural medical system available in the research area and provides an incentive to the development of community health strategies, which aim at achieving a balance between medical demands and supplies. Furthermore, it is on the basis of this analysis of health care utilisation patterns that policies of integration, collaboration and participation can be pursued. In other words, this study seeks to provide a contribution to the advance of an integrated approach to community health development in the research area.

Basically, there are two main directions in the current international debate on the concept of integration in health care. Gröne & Garcia-Barbero (2001) conceptualise integrated care in general as: *‘the integration of services to encourage and facilitate changes in health care services in order to promote health and improve management and patient satisfaction by working for quality, accessibility, cost-effectiveness and participation’*. Similarly, Lionis *et al.* (2009: 2) indicate that in their conception: *‘Community-based integrated care’ is a strategic vision that promotes more joined and consistent action of the health care workforce towards improved performance, thus maximizing population health’*.

In this way, integration refers to the appropriate provision of services in a way to meet the patient's needs at the right time, occurs on the functional, organisational, professional and clinical level (*cf.* Lionis *et al.* 2009). In short, this approach seeks to apply the concept of integration mainly to the organisational structure and staff of one modern medical system, dominant in most Western countries.

Another direction in the development of the concept of integrated health care has emerged within the context of international public health, focused on the situation of health care delivery in developing countries, where WHO (2002a) estimates that about 85% of the population are largely dependent on traditional medicine. In this approach, the concept of Complementary and Alternative Medicine (CAM) in Western countries is also playing a role as it has been defined largely in relation to modern medicine. CAM therapies, which are used instead of conventional medicine, are often termed 'alternative', and, as it is often also used alongside conventional medicine, are also 'complementary'.

The evolving process of integration between traditional medicine, CAM and conventional medicine has necessitated the development of a new conceptual framework as well as a new terminology. Still, substantive barriers, including economic, organisational and scientific differences, as well as an apparent widespread lack of understanding, continue to obstruct attempts at integration (*cf.* Barrett *et al.* 2003). In line with such conceptualisation, several scholars have further developed the concept of integrated health care to indicate and promote the integration of traditional, transitional and modern medical systems in order to respond to the growing demand for traditional medicine and CAM from the side of the patients and clients, particularly in developing countries (*cf.* Slikkerveer 1990; Warren, Slikkerveer & Brokensha 1995; Slikkerveer 2003; WHO 2007, 2008; Ambaretnani 2012; Chirangi 2013).

Following the integrative orientation of the 'Leiden Ethnosystems Approach', which has been rather successfully implemented in several sectors of largely developing countries, this study similarly conceptualises integrative health care as a process to integrate traditional, transitional and modern medicine at the community level, whereby the concept of community health is regarded as a key-concept. Indeed, the definition of community health as described by Sofoluwe & Bennett (1985: 3) as: '*that branch of health service, which aims at achieving the highest level of physical, mental, social, moral and spiritual health for all citizens on community basis*' not only clearly responds to the local peoples' health needs and demands in the research area, but also provides the methodological framework for the documentation and analysis of the various factors involved in the process of utilisation of the plural medical system in Crete. The significance of the concept of 'Integrative Medicine' results from the thoughtful incorporation of concepts, values, knowledge and practices from traditional, alternative, complementary and conventional medicines.

By adopting the concept of medical pluralism, this study is able to describe the particular plural medical system in rural Crete and provides a solid foundation for the integration of different, *i.e.* traditional, transitional and modern medical systems. On the basis of a community-based approach, the present analysis of transcultural patterns of health care utilisation behaviour sheds light on practices of over- and under-utilisation, as well as on multiple utilisation of different medical systems, which serve as indicators for developing strategies on how medical systems can best be integrated in order to meet the needs of the rural population. Furthermore, this research continues to emphasise the important role, which indigenous knowledge of MAC plants as the major component of the traditional medical system plays in the context of health care delivery in rural Crete and as such extends the view of previous studies, which advocate the inclusion of traditional and transitional medical systems in the official health care system (*cf.* Van de Kerk 1993; Slikkerveer 1995; Ambaretnani 2012; Chirangi 2013).

In providing incentives to the advancement of community health and the integration of different medical systems, this research may moreover illustrate a number of specific subjects, which are relevant in the current discussion on health care delivery improvement in Greece. Although this study abstains from drawing a comparison between rural and urban or between

local, regional and national features of medicine and health care delivery, the research analyses patterns of health care behaviour shown by a particular population group in rural Crete at the time of an all-embracing economic crisis. Consequently, any strategy designed in a way to promote community health is proposed on the basis of research data, which have been collected at a time of economic instability and political unrest. Overall, the implications drawn from the present study are expected to be relevant beyond the Island of Crete to include population groups in Europe and the rest of the world, which reside in similar rural areas, rely on a similar plural medical system and have to cope with similar pressures of economic insecurity.

#### **1.4 General Aim and Specific Objectives**

In the light of the preceding paragraphs, it is the general aim of this research to study, document and analyse from a community perspective the behaviour of community members in rural Crete with regard to their utilisation of different systems of medical knowledge, practice and belief with special attention to the role of their indigenous knowledge of MAC plants in the process. In other words, the present study seeks to answer the following general research question: *‘What kind of people with what kind of knowledge of MAC plants use what kind of medicine for what kind of disease?’* In order to achieve this general aim, a number of factors, which may determine such patterns of health care utilisation behaviour, are identified on the basis of the multivariate model of transcultural health care utilisation. The multivariate model has been designed for the analysis of behavioural patterns from a local point of view and has as such been applied to various research areas. The factors, which are identified on the basis of the model, relate to the demographic, social and cultural characteristics of the local population, as well as to the institutional and organisational aspects of the medical system operating in rural Crete. With regard to the local point of view, particular attention is paid to the so-called ‘invisible’ factors, namely to local systems of knowledge, practice and belief, in particular indigenous knowledge of MAC plants. Subsequently, all factors are inserted as variables into the multivariate model of transcultural health care utilisation, which provides a sound basis for running a statistical analysis on the collected data and to ultimately present a completed model of utilisation behaviour as reported by a particular population group living in Crete (*cf.* Slikkerveer 1990; Leurs 2010; Ambaretnani 2012; Chirangi 2013).

In addition to the collection of a rather substantial amount of research data on local patterns of health care utilisation, and related factors, the present research places particular emphasis on the general understanding of local systems of knowledge, practice and belief associated with indigenous knowledge of MAC plants as part of the traditional medical system. Previous studies conducted on the utilisation of medicine in rural Crete have suggested that certain forms of traditional, plant-based medicines provide an important source of local health care. Based on such initial findings, the present study embarks on the formulation of several assumptions, which are related to the transcultural patterns of health care utilisation behaviour shown by the population of rural Crete. In this way, the present research not only contributes to the conservation of cultural diversity of local systems of knowledge, practice and belief, but it also explores alternative strategies for the conservation of biological diversity of the MAC plants in the research area.

The present study moreover adds to the general interest of scholars, particularly of medical anthropologists, in the analysis of processes of illness behaviour and transcultural patterns of health care utilisation within the realm of a plural medical system, as it is found in rural Crete. Furthermore, this research advocates a community-oriented research approach to the study of behavioural patterns and hereby presents a rather realistic image of the health needs, demands and expectations of the local population. Accordingly, this study not only promotes the concept of community health for the population of rural Crete, but it also links up with international policies on community health care delivery, particularly on comprehensive health care coverage and integrative health (*cf.* Slikkerveer 1990; Ambaretnani 2012; Chirangi 2013).

In order to find an answer to the above mentioned central research question of this study, the general aim is operationalised into the following specific objectives:

- *firstly*: to present a description of Crete as the largest Greek island in the Mediterranean Region and a sociography of the research communities of Pírgos and Práitoria in the research area of South-Central Crete;
- *secondly*: to document the plural medical system available in the research area, as it comprises a traditional, a transitional and a modern medical system;
- *thirdly*: to describe the indigenous system of traditional medicine and its components, with special attention for indigenous knowledge of MAC plants, traditional home remedies as well as spiritual and religious forms of traditional medicine;
- *fourthly*: to present an indigenous classification of Medicinal, Aromatic and Cosmetic (MAC) plants, as well as a local priority plant species list for the research area;
- *fifthly*: to present an indigenous illness classification, which is based on local people's perceptions and ideas of illness and disorder;
- *sixthly*: to describe people's health care utilisation behaviour from a community perspective and highlight the different stages of illness behaviour, leading up to the distribution of the reported utilisation rates of patients over the plural medical system;
- *seventhly*: to present the stepwise bivariate, mutual relation, multivariate and multiple regression analyses of transcultural health care utilisation in rural Crete and to explain the significant interactions between various groups of factors, which act as determinants of the reported patterns of utilisation behaviour;
- *eighthly*: to describe the theoretical implications of the study of patterns of transcultural health care utilisation behaviour and to assess the contribution of this study of local systems of knowledge, belief and practice of MAC plants to the improvement of community health and the conservation of bio-cultural diversity in Crete;
- *ninthly*: to describe the methodological implications of this research and to indicate the importance of the research methods and techniques applied to transcultural behavioural patterns
- *tenthly*: to describe the practical implications of the study for the integration of traditional medicine into the formal health care system with special attention for the indigenous knowledge of MAC plants for the improvement of community health and the conservation of bio-cultural plant diversity for the people of Crete in the future.

## **1.5 Structure of the Study**

Chapter I introduces the research area of the present study by means of highlighting the geographical, historical, cultural and ethnobotanical distinctiveness of Crete on the basis of specific examples. The uniqueness of Crete is related to the plural medical system operating in the research area, as it provides the basis for the community-oriented research approach to the analysis of patterns of health care utilisation behaviour applied to this study. Thereafter, a number of theoretical, methodological and practical implications of this research are presented, which promote community health development and as such link up with strategies of bio-cultural diversity conservation, multidisciplinary research on patterns of health care utilisation behaviour and international policies of community health.

In Chapter II, the theoretical background of the present study is introduced and the most relevant principles and theories are reviewed, which are related to the topic of this study. Apart from the literature, important research concepts are addressed from a historical perspective and relevant disciplines are described. The theoretical orientation embarks on a general overview of the concepts of humoral, traditional, modern and herbal medicine and continues with a discussion on the concepts of indigenous knowledge systems and ethnobotanical knowledge systems. In addition, the disciplines of ethnomedicine and medical anthropology and the related key-concept of MAC plants are described. Subsequently, a detailed description of the theory of community health, the health care seeking process and the concept of medical pluralism is presented. Finally, the traditional, transitional and modern medical system are defined and highlighted in relation to the characteristics of the research area.

Chapter III elaborates on the selected research methodology, as well as the methods of data collection and statistical analysis, applied to this study. Following a description of the appropriate 'Leiden Ethnosystems Approach', the multivariate model of transcultural health care utilisation is introduced, which forms the analytical basis of this study. Thereafter, the procedure of adapting the model to the present research is further explained. After the identification of the research methodology, the processes, which have been involved in the selection of the research area and the population as well as in the development of qualitative and quantitative research instruments, are further described. Finally, the chapter concludes with an outline of the practical application of the research instruments used during the fieldwork as well as during the following phase of the statistical data analysis.

Chapter IV assesses the geographical, ethnobotanical, historical, cultural, educational, religious, socio-economic and linguistic characteristics of Greece and Crete as the background to the selected research area.

Chapter V presents a sociography of the research area of South-Central Crete as well as of the research communities of Pírgos and Práitoria. These two communities are described in terms of landscape, history, location, size, as well as migration and settlement patterns. Hereafter, the study population is described in terms of age, gender, social networks, nationality, religion, education, occupation, socio-economic structures, housing, local institutions, as well as adherence to an annual religious canon and to traditional practices and social festivities.

Chapter VI describes in more detail the indigenous systems of knowledge, practice and belief in relation to the plural medical system available in the research area of rural Crete. The traditional medical system is further described on the basis of its components, which include indigenous knowledge and practice of MAC plants and traditional home remedies as well as religious and spiritual forms of medicine. This chapter also provides an overview on the transitional and modern medical system operating in the research area by means of describing the national health care system as well as the practices of distribution of prescribed and non-prescribed medicine. Furthermore, the characteristics of the professions of traditional, transitional and modern health care providers are presented.

Chapter VII assesses local ideas of health, illness and healing on the basis of the plural medical system described, thereby presenting an indigenous illness classification. Furthermore, transcultural patterns of health care utilisation shown by the study population are illustrated and details of internal and external forms of health care utilisation reported as the respondents' contacts with the plural medical system are described.

Chapter VIII introduces the statistical analysis of the patterns of health care utilisation behaviour by describing the processes of data preparation on the basis of the multivariate model of transcultural health care utilisation. Subsequently, the selected methods of bivariate, mutual relations, multivariate and multiple regression analysis, which have been applied to the collected data are explained. This chapter further provides a detailed overview of the results gained from the statistical analysis and presents the final model of health care utilisation for the selected population group. Thereafter, the results are placed within a wider socio-cultural context and in relation to other studies conducted in Crete or on similar topics elsewhere around the world.

Finally, Chapter IX presents the conclusions of the present study and formulates a number of recommendations, as well as theoretical, methodological and practical implications of this research on local patterns of health care utilisation behaviour in rural Crete.

## Notes

- (1.1) For an overview of the stages of fieldwork conducted in Crete since 1986 *cf.* Map 0.1.
- (1.2) In particular, this study focuses on people's knowledge and use of herbs, shrubs and trees as well as fungi for medical purposes. In general, 'Herbs' are botanically defined as seed-bearing plants without a woody stem. For the purposes of the present study, the definition of herbs is extended to include '*any plant with leaves, seeds, or flowers used for flavouring, food, medicine, or perfume*' (Oxford Dictionaries 2013). The definition of herbs applied throughout this study refers to any plant species used for medical purposes and includes herbs in the botanical sense, shrubs and trees. In this respect, a more thorough distinction between the different types of plant species is only made in the context of describing certain medicinal plants in greater detail. In view of the rather minimal occurrence of fungi used for medical purposes, the present study abstains from making explicit reference to the category of fungi but fungal species are, if applicable, highlighted separately throughout this research.
- (1.3) In view of the foregoing definition of 'herbs', the terms 'Plant-based Medicine' and 'Herbal Medicine' are used interchangeably throughout this study.
- (1.4) *cf.* Appendix VI for an impression of the engraving of the goat feeding on Dittany by Dapper.
- (1.5) The present study abstains from using the term 'Western' to refer to systems of medicine or knowledge. In view of the setting of the present study in Crete, Greece, which overlaps with an area many would identify as 'Western', the usage of the term would be rather misleading.
- (1.6) Throughout this study, the terms 'physician' and 'medical doctor' are used interchangeably.
- (1.7) Although not used in this study, 'sickness' has been referred to by Suchman (1963: 65) as: '*personal reactions of the individual, defined in terms of his own feeling state and the reactions of others towards this illness*'.
- (1.8) In this way, illnesses and diseases generally occur simultaneously, as the same episode of ill-health is commonly diagnosed both subjectively by the individual as well as objectively by official medical doctrines. Nevertheless, illness may occasionally be diagnosed in the absence of disease, while diseases may at times occur in the absence of illness, particularly in cases, in which there is no time to develop a psychological, social or cultural reaction to the state of ill-health (*cf.* Helman 1982).
- (1.9) While this study distinguishes between 'medicine' and 'health care', the concept of 'health care utilisation behaviour' is not restricted to forms of health care but incorporates people's use of both medicine and health care, as offered by the respective medical system.
- (1.10) In rural Crete, examples of CAM include homeopathy, aromatherapy and physiotherapy as well as Bach flower remedies. In view of their rather commercial nature, forms of CAM have been categorised as components of the transitional medical system throughout the present study.

